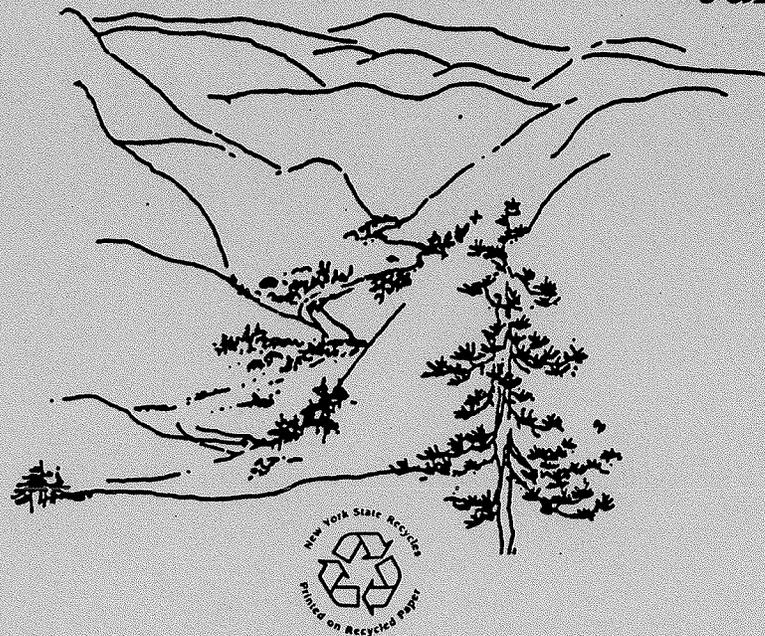


Department of Environmental Conservation

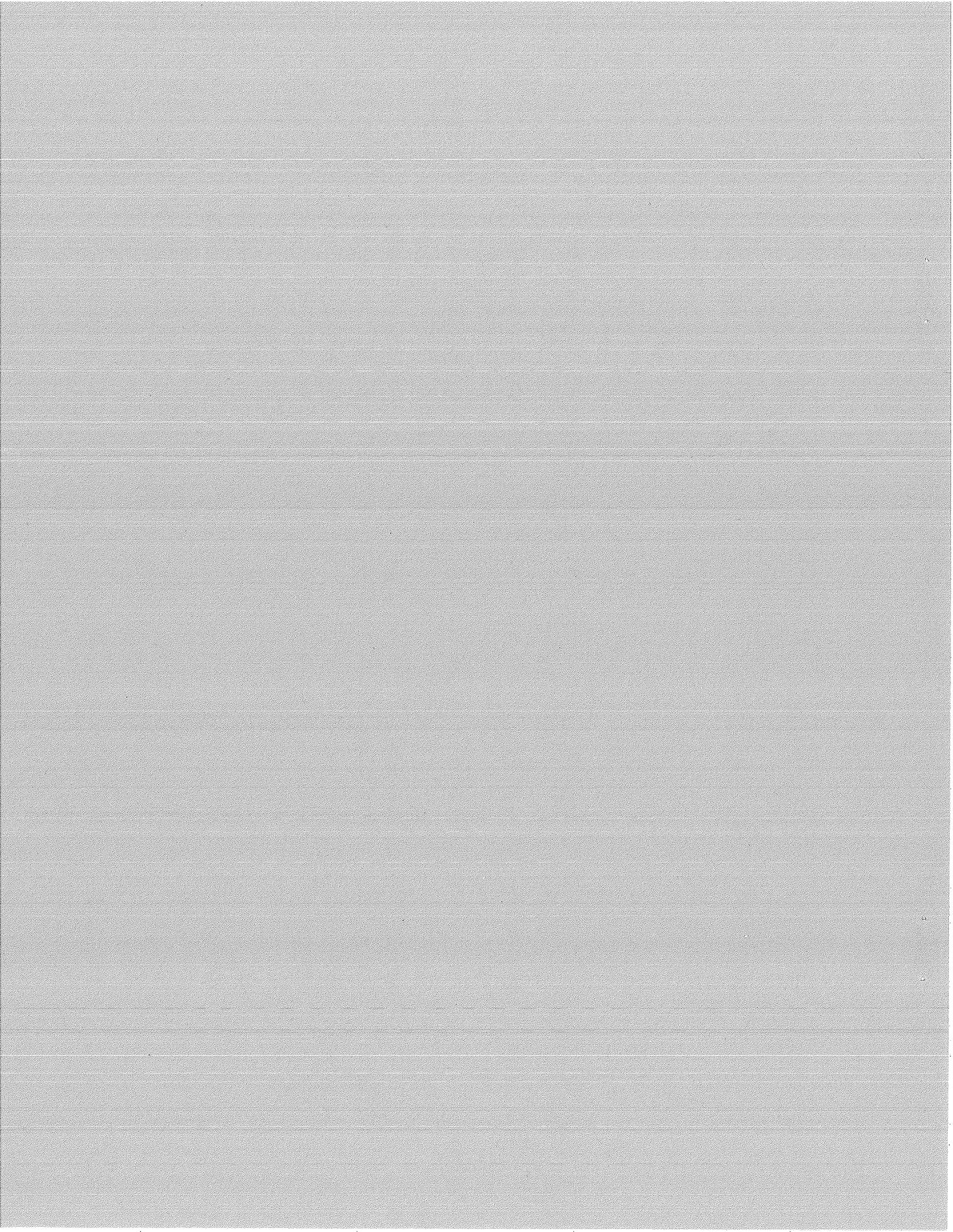
Division of Lands and Forests

Big Indian-Beaverkill Range Wilderness Area Unit Management Plan

June 1993



New York State Department of Environmental Conservation
MARIO M. CUOMO, *Governor* THOMAS C. JORLING, *Commissioner*



BIG INDIAN-BEAVERKILL RANGE WILDERNESS AREA

UNIT MANAGEMENT PLAN

JUNE, 1993

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

**Mario Cuomo
Governor**

**Thomas C. Jorling
Commissioner**

BIG INDIAN-BEAVERKILL RANGE WILDERNESS AREA

UNIT MANAGEMENT PLAN

PREFACE

A rugged, mountainous tract. An area of long, steep-sided ridges with numerous hidden hollows. A great expanse of uninterrupted forest.

While there are many ways to describe the Big Indian-Beaverkill Range Wilderness Area, the most important aspect of this unit of the Catskill Forest Preserve is that it is indeed Wilderness -- a place where we leave behind the comforts of civilization which give us the illusion of mastering rather than belonging to the environment.

The following plan identifies the various resources, both natural and man-made, which make up the Big Indian-Beaverkill Range Wilderness Area. It describes the historical and cultural influences which have shaped the character of the area. Issues and constraints affecting the unit are noted, and both goals and objectives have been developed which will govern the area's future management. The plan proposes specific projects to fulfill these goals and objectives. Although much of the information contained within this plan was developed by Department staff, public input was essential in the decision-making process.

This document represents management objectives rather than a work plan of commitments. Accomplishment of management actions outlined herein is dependent on legislative budget

appropriations, and sufficient personnel to carry them out. However, where possible the Department will work with volunteer groups and pursue alternative funding sources to accomplish some of the proposed projects. For example, volunteers from the NY-NJ Trail Conference have helped the Department maintain several of the hiking trails in the Catskills, including the Mongaup-Hardenburg Trail.

Unit Management Planning Coordinator: Bill Rudge

Region 3 Staff Contributors

Lands and Forests: Frederick Gerty, Jr. - Regional Forester
Jerry Gotsch - Associate Forester
Patricia Rudge - Forest Ranger
Robert Marrone - Forest Ranger
Keith Matteson - Real Property

Fisheries: Michael Flaherty - Conservation Biologist

Wildlife: Ted Kerpez - Sr. Wildlife Biologist

Operations: John Harrington - Regional Operations Supervisor
Brian O'Connor - Laborer Supervisor

Law Enforcement: Howard Wendler - Lieutenant

Regulatory Affairs: Bill Steidle, Associate Environmental Analyst

Cartography: Keith Matteson - Real Property

NYS DEC
21 South Putt Corners Road
New Paltz, NY 12561
914-255-5453

Cover Illustration: Big Indian - Oliverea Valley - Anna Pardini

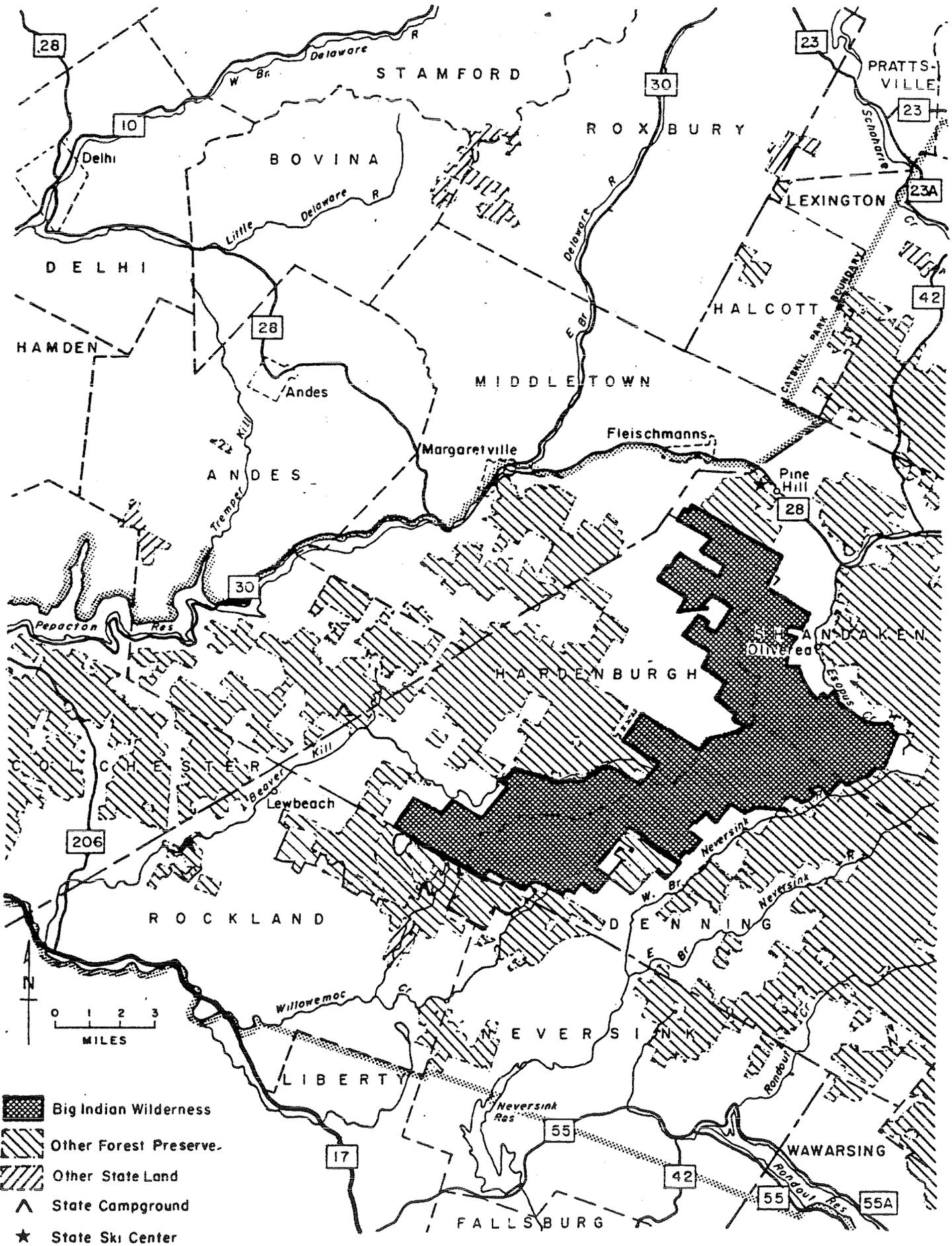
TABLE OF CONTENTS

	<u>PAGE</u>
PREFACE	ii
LOCATION MAP	vi
I. INTRODUCTION	1
A. Area Description	1
1. Location	1
2. Access	2
3. Size	4
B. History	4
II. INVENTORY, USE AND CAPACITY TO WITHSTAND USE	15
A. Natural Resources	15
1. Physical Resources	15
a. Geology	15
b. Soils	17
c. Terrain	17
d. Water	19
e. Wetlands	20
2. Biological	21
a. Vegetation	21
b. Wildlife	25
c. Fisheries	28
3. Visual	29
4. Unique Areas	30
5. Critical Habitat	31
6. Wilderness	32
B. Man-Made Facilities	34
C. Cultural Resources	44
D. Economic Impact	44
E. Public Use	45
F. Capacity of the Resource to Withstand Use	50
III. MANAGEMENT AND POLICY	55
A. Past Management	55
B. Constraints and Issues	60
C. Goals and Objectives	67
IV. PROJECTED USE AND MANAGEMENT PROPOSED	71
A. Facilities Development and/or Removal	71
B. Maintenance and Rehabilitation of Facilities	72
C. Public Use Management and Controls	77
D. Fish and Wildlife Management	83
1. Fisheries	83
2. Wildlife	85
E. Wild, Scenic and Recreational Rivers	86
F. Fire Management	86
G. Administration	87
1. Staffing	87
2. Education	90

TABLE OF CONTENTS

	<u>PAGE</u>
H. Land Acquisition	90
I. Catskill Park State Land Master Plan Amendments . .	91
J. SEQR Requirements	91
K. Relationship of This Unit With Other Forest Preserve Units	92
V. SCHEDULE FOR IMPLEMENTATION/BUDGET	93
VI. BIBLIOGRAPHY AND REFERENCES	98
VII. APPENDICES	103
A. EAF & SEQR Determination	104
B. Wildlife and Fisheries Inventory	118
C. Sign Inventory	127
D. Easements	132
E. Rare Plants	143
F. McKenley Hollow Facilities Map	147
G. Rider Hollow Facilities Map	148
H. Belleayre Ski Center/Belleayre Day Use Area Map . .	149
I. Land Acquisition History Map	151
J. Topographic Map	152
K. Facilities and Wildlife Map	153
L. NYSDEC Addresses and Phone Numbers	back cover

LOCATION OF BIG INDIAN WILDERNESS



-  Big Indian Wilderness
-  Other Forest Preserve.
-  Other State Land
-  State Campground
-  State Ski Center

I. INTRODUCTION

A. Area Description

1. Location

The Big Indian-Beaverkill Range Wilderness Area is a management unit in the south-central portion of the Catskill Park. It is made up of Forest Preserve lands in the Towns of Shandaken, Denning and Hardenburgh in Ulster County. These lands are a part of the Hardenburgh Patent, Great Lots 6 (Division 2 Connecticut Tract and Division 3 Robinson Tract), 7 (Garretson Tract, 4688 Acre Tract, Livingston Tract and Vernooy's Survey), 8 (Lausette Tract), 9 (Beekman Tract) and 10 (Jarvis Tract).

The unit is bordered on the north by the Belleayre Mountain Ski Center Intensive Use Area, on the east by Ulster County Route 47, on the south by the Willowemoc - Long Pond Wild Forest, on the southwest by the Balsam Lake Mountain Wild Forest, and on the northwest by Dry Brook. Both the Belleayre Intensive Use Area and the Willowemoc - Long Pond Wild Forest UMP's have been approved and are in effect. The Unit Management Plan for the Balsam Lake Mountain Wild Forest has been approved but is the subject of an ongoing lawsuit. The decision in that lawsuit may affect

the access to this unit from the Balsam Lake Mountain Wild Forest. Where this unit directly abuts another forest preserve management unit as mentioned, no "on the ground" boundary exists.

The Village of Pine Hill is approximately two miles north of the unit, Big Indian is three miles east and Margaretville is six miles west.

2. Access

The north end of the unit can be reached via State Route 28 to the Village of Pine Hill. From Main Street in Pine Hill head west on Bonnie View Road, then left onto Mill Street. From Mill Street one can reach the Big Indian-Beaverkill Range Wilderness Area via the Belleayre Mountain Ski Center in either of two ways: the Cathedral Glen Trail (via the Railroad Tracks) or the Pine Hill/West Branch Trail (via Woodchuck Hollow).

From the east, the unit can be reached via State Route 28 to Big Indian. From Big Indian head south on Ulster County Route 47. Access to the unit can be gained at several points on the west side of the highway, including trailheads in Lost Clove and McKenley Hollow.

The southern end of the unit can be reached from State Route 17 in a variety of ways,

including:

- From Liberty, east on State Route 55 to Curry, north on Sullivan County Route 19 to Claryville, west on Sullivan County Route 157 (changes to Ulster County Route 47) about 1.3 miles to Round Pond Road. West on Round Pond Road to Black Bear Road. Here one can turn north onto Black Bear Road or continue west on Round Pond Road into Sullivan County where the road changes names and is known as the Pole Road. From the Pole Road the unit can be reached by heading north on the Flugertown Road to the Long Pond - Beaverkill Range Trailhead.
- From Livingston Manor (Exit 96 on Route 17), east on Sullivan County Route 81 six miles to DeBruce. North on Mongaup Road 3 miles to Mongaup Pond Campground. Mongaup-Hardenburgh trailhead is at the north end of the Pond.

Access to the western side of the unit can be gained in two ways:

- From Livingston Manor north on old Route 17 to Sullivan County Route 151. North on Route 151 into Ulster County. West on the Beaverkill Road to trailheads at Hardenburgh

or Quaker Clearing.

NOTE: The Department has proposed abandonment of the Quaker Clearing Parking Lot and relocation of the Hardenburgh-Neversink hiking trailhead to the end of the Beaverkill Road in the Balsam Lake Mountain Wild Forest UMP.

- From State Route 28 at Arkville, south on Dry Brook Road to Rider Hollow Road or to Seager (Southern terminus of Dry Brook Road).

3. Size

This is the second largest management unit in the Catskills, ranging from 1 1/2 to 4 1/2 miles wide, stretching over 19 miles long and encompassing approximately 33,500 acres of forest preserve land.

B. History

Lenni Lanape Indians, members of the Algonkian Indian nation, were probably the first to visit the region. While no Indian settlements of significance are known, it is likely they utilized the area for hunting and fishing. Despite this, several of today's place names have their origins in Indian words or legend.

Shandaken is derived from the Algonkian words for hemlock which was plentiful in the region prior to the Tanning industry. Esopus is the Algonkian word for brook. Neversink is an Indian name with several possible meanings including a mean, mad river, a continual running river which never sinks into the ground, and place of the white rock. Willowemoc was the name of a local group of Lenni-Lenape Indians. Tunis Pond is said to have been named after Chief Tunis, an Indian who legend says buried a cache of bullets near the lake and was killed when he would not reveal its location.

Several versions of the legend of Big Indian exist. The earliest version tells of "a monster of a red man" who roamed the region in Revolutionary days and occasionally raided local settlements, often killing and burning the innocent inhabitants. When the Big Indian killed a beautiful little girl, an old settler set off into the mountains vowing revenge. Finding the Big Indian alone by a campfire, he shot him dead and buried him at the spot known ever since as Big Indian. In later years, the Ulster and Delaware Railroad "improved" on the story in hopes of attracting tourists to the Catskills (as did Lionel DeLisser in his Picturesque Ulster, 1897). In the improved version, a seven foot tall Indian, "a sampson in

strength," named Win-ni-sook falls in love with a beautiful white girl named Gertrude, the daughter of early settlers. Gertrude loved the powerful warrior, but was promised by her parents to another of her own race. Marriage brought Gertrude an unhappy life, as her new husband was of short temper and bad habits. Seeing this, Win-ni-sook began visiting her in secret and eventually convinced her to run off with him and live in a wigwam amongst his people. They lived together in peace for several years. However, Win-ni-sook continued to carry out raids on the Dutch farms in the lower valleys. Upon returning from one of these raids, he and the other members of his tribe were overtaken by farmers at the head of the Big Indian Valley. In the ensuing battle Win-ni-sook was recognized and shot by Gertrude's white husband. In agony the Big Indian took refuge in a hollow pine tree where soon after he died. Gertrude found him and, ever faithful, took up residence near the tree till her death.

Perhaps the most compelling Indian legend is that of Blossom Falls (now known as Crazy Nell Falls) on the Esopus above Otter Falls. It is a tale of a brave Indian warrior named Lotowanka who takes revenge on a rival Indian tribe despite his love for the rival chief's daughter, Ta-wa-sen-ta (Blossoms of Spring).

To attempt to summarize the story here would be an injustice. See R. Lionel DeLisser's Picturesque Ulster, pages 197-212, for the most eloquent version.

In 1706 the Indian sachem (wise man) Naisinos is said to have sold a large tract of land which included the Catskill Mountains to Johannes Hardenbergh for 60 pounds. Having thus cleared any title claims the Indians may have had with the area, Hardenbergh then persuaded Queen Anne of England to grant him and his associates title to the region (1708). This grant became known as the Hardenburgh Patent and encompassed nearly 1.5 million acres.

Various disputes and survey problems followed (local Indians in particular enjoyed removing the stone piles of the surveyors). This led to arguments over title to various lots within the patent. The uncertainty kept most settlers out of the region and the Catskills remained an undeveloped wilderness until the nineteenth century.

The Ulster and Delaware Turnpike, running west from Kingston along the Esopus to the Susquehanna country provided the first developed access to the region. Promoted by Hardenburgh Patent landowners whose backwoods lands it would make reachable and more valuable, the New York legislature chartered the road and authorized its managers to issue stock and collect

tolls. While never a money maker for stockholders the road succeeded in opening the region to settlers and the growing tanning industry.

Early settlers who left their "mark" on the Region included Hiram Seager (Seager) Derrick Haynes (Haynes Hollow) and Barney Rider (Rider Hollow). Oliveria was named after a much respected family that settled in the valley. Other hollows named after people who once resided there include McKenley Hollow, Burnham Hollow and Maben Hollow. Catskill woodsman Mike Todd spent his life hunting and fishing in this area. For a real taste of the life of a true Catskill native, see A Catskill Woodsman: Mike Todd's Story by Norman Studer.

The leather tanning industry of the nineteenth century was arguably the most notable era in the region's history. The War of 1812, the Mexican-American War and the Civil War all required great quantities of leather, and the Catskills, with their abundance of hemlock trees and clear running streams were well suited for the tanning industry. Hemlocks were important in that hemlock bark provided tannin, a key ingredient in the tanning process.

Animal hides, imported from South America, were shipped up the Hudson by boat and then loaded on ox carts to be brought to tanneries in the Catskills. In the town of Shandaken, the tanning business was more

extensive than in any other town in Ulster County. Seven tanneries were in operation at one time, including the Wey Tannery in Big Indian, the Smith Tannery in Smithville (near Pine Hill) and the Guigou Tannery in Pine Hill. At their peak in the mid 1850's, it is estimated that the Wey Tannery utilized 6,000 cords of hemlock bark each year and the smaller Smith and Guigou tanneries each utilized 2,500 cords/year. Its likely that tanneries in Claryville and DeBruce utilized hemlock from the area as well.

Thousands of hemlocks were felled annually to meet this demand, and by the late 1870's all but the most inaccessible stands had been cut. Although some hemlock wood was utilized for bridge planking or other local uses, it is estimated that 95% of the barkless fallen trees were left to rot in the woods (Kudish 1971). The effects of this industry were not limited to the devastation of vast acreages of hemlock. Decaying animal tissue created a terrible stench, by products of the industry polluted streams, the trout population declined, land values dropped and the litter of tree limbs and trunks on the forest floor resulted in forest fires which often spread beyond the cut over lands. In fact, once harvested of hemlock bark, most land was not considered worth paying taxes on and much of it reverted to the county and ultimately to the

state, forming the initial forest preserve.

Following closely on the heels of the tanning industry was a smaller, but significant wood products industry. Sawmills appeared on nearly every major brook. In this region sawmills could be found on the Elk Kill in Burnham Hollow, in Maben Hollow, on the headwaters of the Esopus (Dutcher), on Birch Creek in Pine Hill, along the Dry Brook (several locations) the Beaver Kill and the West Branch of the Neversink River. A wood turning mill utilized the old Wey Tannery buildings in Big Indian. A large chair factory opened in 1870 in Shandaken Centre. Owned by Hiram Whitney, it averaged 1600 dozen chairs/month and employed over 65 people. Pine Hill had a chair factory as well.

Shaved hoops made from hardwood saplings for cooperage and packing box strapping was another common, if not doubtful industry which provided a living for many former tannery workers. Hoop shanties were especially common on the cutover hemlock lands where hardwood saplings were plentiful.

Another important period in the area's history was the Catskill Resort Era. As early as 1854 boarders are known to have come to the Guigou family's Mountain Inn in Pine Hill by stage. But it was not until the Rondout and Oswego Railroad (later known as the Ulster and Delaware) reached Pine Hill in 1872 that the

tourist industry took off. The railroad opened the Catskills to the common man at a time when Americans were eager to leave overcrowded and polluted cities for the healthful, moral atmosphere of the country. Hotels to accommodate the new railroad guests quickly sprang up throughout the region. They included the Rip Van Winkle Hotel in Pine Hill which accommodated 150 guests, the Slide Mountain House and the Panther Mountain House on the Upper Esopus and La Ment's Hotel in Big Indian. But probably the most notable in this region was the Grand Hotel. Backed by Thomas Cornell of the Ulster and Delaware Railroad, the Grand Hotel was the largest of three large hotels on the Ulster and Delaware line (the others being the Overlook and Tremper Mountain Hotels). Built in 1880 on Monka Hill near present day Highmount, it was an eighth of a mile long, had accommodations for 450 guests and commanded a mountain view "unequaled in the state." Having been built on the line between the towns of Shandaken (Ulster County) and Middletown (Delaware County) it enjoyed an added advantage concerning its ability to serve liquor. When Shandaken refused to grant a liquor license, the bar was moved to Middletown. When Middletown prohibitionists gained strength, the bar was moved back to Shandaken. The sliding barroom proved to be a great attraction.

It was more than fancy hotels and the railroad that attracted summer boarders to the region. In 1879 Arnold Guyot, a Princeton geography professor and avid hiker, published a map of the Catskills which brought to view a much more complete and accurate picture of the region. Prior to Guyot, Kaaterskill High Peak was thought to be the highest of all peaks in the Catskills. The Catskill Mountain House site overlooking the Hudson was considered to be in the heart of the region. Guyot's map not only revealed the full extent of the Catskills, it drew attention to the Shandaken region in declaring Slide Mountain to be the highest of the Catskill summits. The new map met with immediate acceptance not only due to its accuracy but also because it cleared up many old confusions about place names. For example, the locally known Round Top at the head of Dry Brook was renamed Doubletop and the neighboring South Mountain was renamed Graham Mountain. Dry Brook Mountain was renamed Haynes Mountain. Inspired by Guyot, many summer borders took to hiking and climbing in the surrounding mountains (Evers, 1972).

While the common man enjoyed the region via short stays in hotels and boarding houses, the wealthy bought large estates and often stayed for the entire summer. Men of note include Jay Gould, a railroad magnate who

bought land in the Dry Brook Valley. His son George developed a farm as well as an Elk and Deer Park on the property which was considered to be the "largest and best stocked in the eastern states (DeLisser 1897)." While no longer considered a wildlife "park," the Gould family continues to take great pride in their Dry Brook property.

Julius Forstmann, a German immigrant who established the Forstmann Woolen Company of Passaic, New Jersey developed a summer estate and hunting/fishing retreat in Frost Valley. The Forstmann Woolen Company was famous for fine woolen garments including Gaberdine uniforms which they supplied to the Air Force during both World Wars. Forstmann loved to hunt deer and like Gould, he too constructed a Deer Park on his property (see Past Management). The extravagant summer home he built in 1915, known locally as "the Castle," now serves many year-round guests of the Frost Valley YMCA, present-day owners of his estate.

The decline of the Catskill Resort era began with the turn of the century. Many factors contributed to its decline, including down turns in the economy, changing tastes and, perhaps most importantly, the advent of the automobile. While the area continues to attract outdoor enthusiasts, it does so in more modest numbers.

As noted above, much of the land making up this unit was acquired in tax sales from the county. As shown on the Land Acquisition History Map in Appendix I, most parcels were acquired prior to 1930. More recently acquired lands (marked with a "D" on the map) were acquired with funding from land acquisition bond acts approved by the voters of the state.

For more information concerning the history of this unit see Past Management, Section III A.

II. INVENTORY, USE AND CAPACITY TO WITHSTAND USE

A. Natural Resources

1. Physical Resources

a. Geology

The Catskill Mountains have their origins in an ancient river delta. Some 300 million years ago an inland sea covered western New York and extended westward to the Mississippi Valley. High mountains dominated New England and southeastern New York. In between these ancient mountains and the inland sea, in the region now occupied by the Catskills, was a great delta or alluvial fan upon which the rivers from the mountains to the east were spreading gravel, sand and mud. This sediment accumulated to a depth of several thousand feet before deposition slowed as the mountains were worn low. Then, some 200 million years ago, the delta as well as the surrounding sea-bottom of sedimentary rock began to rise to a level higher than the region of New England whence its constituents were derived. What followed was a period of erosion which formed the Catskills.

The sea bottom rock (sandstone and shale), derived from much finer sediments than that of the delta, were less resistant to erosion, and gradually eroded away. The delta, being composed of cemented gravel, or conglomerate, especially in the upper beds, was very resistant to erosion. Thus the Catskills, especially the eastern Catskills where the coarsest of gravel from the ancient river delta was deposited, were able to withstand the forces of erosion and maintain their elevation. To the west, as the sediments from the ancient ocean become finer and finer, the resulting plateau was more susceptible to the forces of erosion, and consequently the mountains were worn down.

The glacial period which affected the Catskills some 20,000 - 50,000 years ago completely reworked the region's soils and altered many drainages. However, the present mountainous form of the Catskill is due almost entirely to the action of streams in carving deep valleys in the flat-lying rocks of the uplifted plateau.

b. Soils

The soils found in the Big Indian-Beaver Kill Range Wilderness Area belong to the Arnot - Oquaga - Lackawanna Association, an association of soil types derived from glacial till. These soils vary in depth, but are generally quite shallow. They are typically excessively to moderately well drained, dominantly very steep, medium textured, acidic soils with numerous surface boulders. A series of narrow benches give a stairstep appearance to the terrain. Exposed bedrock, including ledges and rock outcrops, are common.

Runoff is typically rapid and the potential for both erosion and drought is high. In general, these soils have good potential for recreational uses such as hiking and camping provided that trails are protected from erosion.

c. Terrain

This is a rugged area, characterized by high mountain ridges and steep-sided valleys or hollows. Typically the ridges and mountain sides are terraced with slopes

varying from moderate to very steep. The mountain tops and ridge lines are very often level or rolling.

The southern half of the Big Indian-Beaverkill Range Wilderness Area is dominated by the Beaverkill Range. This is a ridge line that runs in a southwest-northeast direction. There are several unnamed mountain tops. Peak elevation ranges from 2900 to 3400 feet.

The northern half of the unit has less of a distinct ridge line relative to the southern portion. There is a basic "L" shaped seam starting at Hemlock Mountain along County Route 47 and extending northward to Belle Ayr Mountain and Route 28. Generally the mountain tops are higher in elevation in the northern half. There are eight peaks above 3200 feet. The highest is Doubletop with an elevation of 3860 feet above sea level. Prominent peaks include the following:

Doubletop	3860 feet
Big Indian	3700 feet
Fir	3620 feet
Balsam	3600 feet
Eagle	3600 feet
Haynes	3420 feet
Spruce	3380 feet
Hemlock	3240 feet

There are several distinctive hollows or steep sided valleys. These hollows usually run in an east-west direction blocked by steep mountain sides at one end. Among the hollows in the unit are Rider Hollow, Maben Hollow, Burnham Hollow, McKenley Hollow and Hayne's Hollow. Hanging Birds Nest, Number Ten, Quaker Cove, and Dog are also hollows located within the unit.

The lowest elevation is 1500 feet above sea level located in McKenley Hollow.

d. Water

Within this unit is the divide between the Delaware and Hudson River basins. The divide is a ridge line connecting Belleayre Mountain (just north of the unit) with Hemlock Mountain (near Winnisook Lake). Drainages to the north and east of this divide flow into the waters of Esopus Creek and ultimately the Hudson River. Drainages to the south and west of the divide flow into Dry Brook, the west branch of the Neversink and the Beaver Kill. All these streams eventually lead to the Delaware River.

There are very few ponded bodies of water within this wilderness area.

Tunis Pond (3.4 acres) straddles the boundary between this unit and the Balsam Lake Mountain Wild Forest. A small beaver pond (.75 acres) lies on the east side of the Neversink-Hardenburgh Trail, at the height of land between the Beaver Kill and Fall Brook drainages.

The unit has several streams flowing down from the Big Indian-Beaverkill Ridge. Among the major streams of the unit are the following:

Biscuit Brook	Hanging Birds Nest Brook
Pigeon Brook	Elk Bushkill
Shandaken Brook	Quaker Cove Brook
High Falls Brook	Number Ten Hollow Brook
Beaverkill	Dog Hollow Brook
Willowemoc Creek	Gulf of Mexico Brook
Sucker Brook	Rider Hollow Brook
Gill Gully	Mine Hollow Brook
Fall Brook	Haynes Hollow Brook
Wolcott Brook	Esopus Creek
McKenley Hollow Brook	

e. Wetlands

There are no state regulated (greater than 12 acre) wetlands within this unit. However, several small, scattered wetlands do exist, including those at or near:

- Sucker Brook (tributary headwaters)
- Sand Pond
- Willowemoc headwaters
- Tunis Pond
- Pigeon Notch (Col between Doubletop and Big Indian)
- Beaver Kill Headwaters

For more information on the Pigeon Notch wetland see Section II - Unique Areas.

2. Biological

a. Vegetation

The Big Indian-Beaverkill Range Wilderness Area is almost completely forested, with minor openings associated with ponded waters or wetlands being the only exceptions.

The northern hardwood forest type covers the greatest part of the unit, dominated by sugar maple, beech and yellow birch. Black cherry, white ash, red maple, hemlock, basswood, red oak, white pine and big tooth aspen are also common, but only locally abundant.

On the upper slopes and ridges, usually above 3000 feet in elevation, a "ridge forest type" generally dominated by black cherry and to a lesser extent, yellow birch, red maple and beech predominates. It is interesting to

note that in the eastern Catskills, this ridge forest type is dominated by balsam fir, red spruce and paper birch. Botanist Michael Kudish, in his PhD thesis entitled Vegetational History of the Catskill High Peaks, theorizes that greater competition for soil nutrients and discontinuities caused by wind, ice and snow damage killing trees in large numbers may have favored intolerant and mid-tolerant tree species in the western Catskills. He further states that these species are maintaining themselves as "climax" species.

While the hardwoods mentioned above dominate most of the ridge forests within this unit, there is one significant exception. Balsam fir dominates the summit of Doubletop. It is common on Fir, Big Indian, Balsam and Eagle, but it is only a minor constituent on Hemlock, Spruce and Haynes and is nearly absent from the Beaverkill Range (as well as Graham and Belle Ayr, summits just outside this unit). Balsam fir can occasionally be found at lower elevations within the unit, including in the col between Big Indian and Eagle, and along

both the Beaver Kill and Biscuit Brook. Red spruce and paper birch are nearly absent from the unit. However, a notable exception is the red spruce grove found in Pigeon Notch at an elevation of 3200 feet between Big Indian and Doubletop. Kudish describes this grove as "the westernmost outpost of high elevation spruce in the Catskills."

One other important note must be made concerning the ridge forest within this unit. Unlike much of the Catskills which have been logged and/or burned over at one time or another, the Big Indian Ridge, from Belle Ayr southward to the headwaters of Biscuit Brook, may never have been cut. In fact, Kudish describes this section of the Pine Hill - West Branch Trail as "the longest stretch of trail through uninterrupted virgin forest in the Catskills." Land acquisition records seem to support this claim, as most of the ridge was acquired by New York State as forest preserve prior to the turn of the century.

Small hemlock stands occur sporadically throughout the unit, generally below 2500 feet in elevation. They are most often

found on north and east facing slopes and in ravines such as that in Mine Hollow.

An occasional conifer plantation can be found on old farmland within the unit as well. Examples include a red pine plantation in Haynes Hollow and a larch plantation in Rider Hollow.

The understory of the northern hardwood forest is dominated by sugar maple and beech seedlings. Yellow birch, hemlock, striped maple and black cherry are also common, along with serviceberry and witchhobble. Herb and ground cover plants include woodfern, hayscented fern, Christmas fern, jewelweed, stinging nettle, foamflower, trillium, red baneberry, starflower and wood sorrel.

In the ridge forests, witchhobble, black cherry, mountain maple and striped maple seedlings dominate the understory and the mountain variety of the woodfern dominates the ground cover plants. Other plants of note include mountain ash, pin cherry, clintonia, bunch berry, starflower, wood sorrel, Canada mayflower and clubmoss.

Rare Plants

Northern monk's-hood (*Aconitum noveboracense*), a flowering plant listed as threatened by the U.S. Fish and Wildlife Service under the provisions of the Endangered Species Act of 1973 is known to occur on forest preserve lands within this unit as well as on adjacent private lands.

Jacob's-ladder (*Polemonium vanbruntiae*), another flowering plant which while not on the federal list, is listed as threatened by NYS DEC under Part 193.3 of Title 6, New York State Codes, Rules and Regulations is also known to occur within this unit. Information on both of these plants can be found in Appendix E (Rare Plants).

b. Wildlife

This unit is located within the Catskill Peaks ecological zone and the wildlife which occur here are similar to those found in other areas of mature northern hardwood forest in southeastern New York State. The mature northern hardwood forest favors late successional species such as black bear, porcupine, gray squirrel, snowshoe hare and

wild turkey. Species that use earlier successional stages, such as white-tailed deer, cottontail rabbit and ruffed grouse occur, but at lower population levels than in nearby areas of lower elevation, flatter terrain and more diverse vegetation.

With the exception of the Atlas of Breeding Birds in New York State (see Bibliography and References), a formal inventory of animal life has not been undertaken in recent years. However, Chambers in his handbook, "Integrating Timber and Wildlife Management" (1983), compiled an extensive listing of wildlife presumed to be in this ecological subzone. Based on Chambers' work, 21 species of amphibians, 16 species of reptiles and 48 species of mammals possibly reside in the Big Indian-Beaverkill Range Wilderness Area. Based on both Chambers' listing and the Atlas of Breeding Birds in New York State, there are 125 species of birds that may nest in the unit or utilize the unit during migration (see Appendix B, Wildlife).

There are no endangered animal species known to reside in the area. Bald eagles and

peregrine falcons, both endangered species, may travel through the area during migrations. According to the Atlas of Breeding Birds in New York State and Chambers (1983), the red-shouldered hawk, listed as threatened by NYSDEC, is a confirmed breeder within or adjacent to this Unit. However, the Natural Heritage Program has no records of the red-shouldered hawk in or adjacent to this unit. As a threatened species, the red-shouldered hawk is fully protected under New York State Environmental Conservation Law.

The eastern bluebird, common nighthawk, common raven, Cooper's hawk, vesper sparrow, small-footed bat, spotted turtle, wood turtle, eastern hognose snake, Jefferson salamander, blue-spotted salamander and spotted salamander are all "Special Concern" species which may reside in this unit (Appendix B, Wildlife). Special Concern species are native species that either are vulnerable to becoming endangered or threatened or their present status in New York is uncertain. The Special Concern category, while existing in DEC rules and

regulations, does not in itself provide legal protection to the species.

This unit provides nesting habitat for forest-interior, area-sensitive bird species including the red-eyed vireo, black-throated blue warbler, black-and-white warbler, Canada warbler, northern waterthrush, Louisiana waterthrush, scarlet tanager and rose-breasted grosbeak (Appendix B, Wildlife). Recent research indicates that these species require large areas (7,500 ± acres) of undisturbed forest for optimal breeding habitat (Robbins et. al. 1989).

c. Fisheries

This unit includes the extreme headwaters of the Esopus Creek, Beaver Kill, Willowemoc Creek and West Branch Neversink River - streams with very important fisheries outside the unit. Important tributaries to the Dry Brook emanate from this unit as well. All of these perennial streams provide habitat for a variety of fish species. Some of the streams within the unit are undoubtedly important as spawning streams in the fall for brook trout and brown trout and

in the spring for rainbow trout in the Esopus Creek tributaries. Landlocked Atlantic salmon also spawn in the fall in some of the tributaries to the West Branch Neversink River within this unit.

Little is known of the fisheries in Tunis Pond, the only ponded water within the unit (other than an occasional beaver pond). Bullheads may be the only fish present. A 1935 water survey noted the following: 3.4 acre shallow pond (maximum depth of 10 feet), dark tea stained water with a pH of 6.2.

Other fish species occurring within the unit include white sucker, yellow perch, sculpin, golden shiner and longnose dace. For a complete list of the fish species found within the unit see Appendix B.

No State or Federal endangered, threatened or special concern fish species have been documented within the boundaries of the unit.

3. Visual

As with other forest preserve units, the Big Indian-Beaverkill Range Wilderness Area is an important component of the viewshed which makes

the Catskill Park a unique resource in southern New York.

Vistas from within the unit are rare. In fact, the most prominent viewpoints associated with this unit (Balsam Summit and Doubletop Summit) are on private land adjacent to the unit. This lack of vistas may explain the relatively low level of public use. However, the visual opportunities are not limited to high elevation vistas. This area has a variety of features such as streams, waterfalls, diverse vegetation and wildlife which all contribute to the visual resources of the unit.

4. Unique Areas

- a. **Otter Falls** - In a hemlock ravine on the Esopus Creek, 3.5 miles south of Oliverea, a rock outcrop splits the creek's flow into two parallel, 15 foot high falls over a 20 foot rock wall. A large clear pool can be found at the base of a smooth, curving chute which winds its way down from the bottom of the falls another 15 feet. Thick mosses and ferns cover the rocks around the falls.

- b. **Pigeon Notch** - A red spruce grove at the headwaters of Pigeon Brook, in the col between Doubletop and Big Indian Mountain, is miles from the nearest grove of red spruce and is the westernmost outpost of high elevation spruce in the Catskills.
(Kudish 1971).

5. Critical Habitat

Seven deer wintering areas have been identified within this unit (see Facilities and Wildlife Map, Appendix K). They are generally associated with south oriented slopes which provide less severe climate and more accessible food during the winter months. This is the minimum area known to be important to wintering deer. Any southern exposed slope in this area is likely to be used by wintering deer.

The unit is also a part of the northern Catskill black bear range and provides necessary habitat for this species.

As mentioned earlier, this unit also provides critical habitat for both Northern Monk's-hood and Jacob's Ladder, plants considered threatened in New York State.

Many of the streams within the unit provide critical spawning habitat for fish, especially trout and salmon. The landlocked Atlantic salmon run in the tributaries of the West Branch Neversink River is the only run of its kind within the region.

6. Wilderness

The Catskill Park State Land Master Plan defines wilderness as "an area where the earth and its community of life are untrammled by man -- where man himself is a visitor who does not remain." It further defines wilderness as "an area of State land or water having a primeval character, without significant improvements or permanent human habitation." Such an area is protected and managed so as to preserve its natural conditions. Wilderness: (1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) offers opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least ten thousand acres of land (and/or water) or is of sufficient size and character as to make practicable its preservation and use in an

unimpaired condition; and (4) may also contain ecological, geological or other features of scientific, educational, scenic or historical value.

The Big Indian-Beaverkill Range Wilderness Area is classified wilderness due to its size, primeval character, opportunities for solitude and lack of significant improvements.

B. Man-Made Facilities

1. **Roads**

a. Public Roads

- (1) Ulster County Route 47; the unit abuts the west side of Ulster County Route 47 at five different locations totaling 1.46 miles.
- (2) McKenley Hollow Road - 0.01 miles.
- (3) Rider Hollow Road - 0.01 miles.

b. Unmaintained Town Roads

- (1) Black Bear Road - 1.64 miles
- (2) Hardenburgh - Neversink Road - .51 miles. Unmaintained Town of Hardenburgh road now closed to the public (via cable erected by the Balsam Lake Angler's Club at Quaker Clearing). Note: This road is the northwest end of the previously mentioned Black Bear Road which is in the Town of Denning. In very poor condition.

c. Private Landowner Access Easements (traversing forest preserve lands)

- (1) **Big Indian Mountain Association** - Lot owners within the Big Indian Mountain Association Development have the right to use roads which were originally intended to provide access to both the Development and State land, but since New York State purchased a large portion of the original development, these roads now traverse forest preserve land.

The public does not have access to these roads via the Big Indian Mountain Association Development. (The Development roads are private beyond the Forest Preserve Access Parking lot on Burnham Hollow Road).

d. Public Easements Traversing Private Land
Adjacent to Unit

- (1) McKenley Hollow from parking lot to state land (Frank Hitz). See Appendix D.
- (2) Association Road - Burnham Hollow, Big Indian Mountain Association Development; New York State owns a 33 foot wide easement which allows for public vehicular traffic over 181 feet of this road to access the Burnham Hollow Forest Preserve Access Parking Lot.
- (3) Maben Hollow - two easements (across lands in Farm Lots 8 and 9, Lot 2, Division 2, Great Lot 7:
 - (a) Southeast along Esopus Creek - 741 feet
 - (b) Southwest to the Gore Lot near Fir Mountain, presently gated - 3,380 feet. See Appendix D.
- (4) Fernwold Cottage Lot (part of Lot 3, Division 2, Great Lot 7) from County Road 47 - Unspecified trail, to state land. See Appendix D.
- (5) Hardenburgh - New York State owns a 66 foot wide, 150 foot long easement across lands of the Balsam Lake Angler's Club for ingress and egress on foot, skis and snowshoes from the Hardenburgh Trailhead Parking Lot (on northside of Beaverkill) across the Beaverkill to the Big Indian - Beaverkill Range Wilderness Area.
- (6) Haynes Hollow - unspecified trail (Scott Haynes) route over Lot 61, see Appendix D.
- (7) Balsam Lake Club - The public has the right to cross the lands now owned by the Balsam Lake Club (Except for the 2.3 acre Club House Parcel) to access adjacent forest preserve lands for the purpose of hunting, and for conservation, scientific and educational purposes provided that this right does

not injure the Club's lands nor interfere with the Club's use and enjoyment of their land (See Appendix D). This easement, however, is the subject of ongoing litigation. The outcome of that litigating may affect the useage of this easement.

e. Undeeded Public Access Traversing Private Land Adjacent to Unit

- (1) Seager Trail - This trail traverses private property from the trailhead parking lot to State land at Shandaken Brook, a distance of 1.9 miles. This access is by verbal permission of the landowner.
- (2) Pine Hill - West Branch Trail - This trail traverses private property at two locations, both of which are by verbal permission of the respective landowners:
 - Balsam Mountain, 0.25 miles
 - Big Indian Mountain (southwest of summit), 0.1 miles.

f. Public Easements Across Private Land Adjacent to the Belleayre Mountain Ski Center Which Serve This Unit

- (1) Pine Hill/West Branch Trail - New York State owns a 20 foot wide easement over parts of Lots 87 and 88, Lausette Tract (Woodchuck Hollow) for ingress and egress from Pine Hill Village (Woodchuck Hollow Road) to Belleayre Mountain Summit. See Appendix D.

g. Undeeded Public Access Traversing Private Land Adjacent to the Belleayre Mountain Ski Center Which Serve This Unit

- (1) Lost Clove - Lost Clove Trail traverses an old road across private property to state land - 1.2 miles.

2. Barriers

- a. McKenley Hollow - Boulders are utilized to prevent motor vehicle use of the Olivera - Mapledale Trail (east end).

- b. **Rider Hollow** - A gate prohibits unauthorized motor vehicle access to the west end of the Oliverrea - Mapledale Trail.

3. Trailheads

a. With Maintained Parking (4):

- (1) McKenley Hollow
- (2) Biscuit Brook
- (3) Seager (outside unit on private property)
- (4) Rider Hollow

b. Without Maintained Parking:

None.

c. Trailheads in adjacent management units which affect this unit (6):

- (1) Lost Clove (Belleayre Mountain Ski Center) outside unit on private property, parking available.
- (2) Pine Hill (Belleayre Mountain Ski Center) - no parking lot.
- (3) Round Pond (Willowemoc-Long Pond Wild Forest) - limited parking on Black Bear Road.
- (4) Mongaup Pond (Mongaup Pond Campground) - parking lot at south end of Pond.
- (5) Hardenburgh (Balsam Lake Mountain Wild Forest) - parking available
- (6) Quaker Clearing (Balsam Lake Mountain Wild Forest) - parking available here or at the Balsam Lake Mountain Trailhead.

NOTE: The Department has proposed abandonment of the Quaker Clearing Parking Lot and relocation of the Hardenburgh-Neversink hiking trailhead to the end of the Beaverkill Road in the Balsam Lake Mountain Wild Forest UMP.

4. Hiking Trails (± 29.42 miles):

- a. Mongaup/Hardenburgh Trail (Blue Markers) - 5.85 miles.
- b. Long Pond/Beaverkill Ridge Trail (Red Markers) - 1.66 miles.
- c. Neversink/Hardenburgh Trail (Yellow Markers) - 2.31 miles. (Proposed relocation of a portion of this trail is included in the Balsam Lake Mountain Wild Forest UMP.)
- d. Pine Hill/West Branch Trail (Blue Markers) - 11.90 miles.
- e. Seager/Big Indian Trail (Yellow Markers) - 3.05 miles.
- f. Oliverea/Mapledale Trail (Red Markers) - 3.61 miles.
- g. Mine Hollow Trail (Yellow Markers) - 1.04 miles.

Note: The Lost Clove Trail (Red Markers - 1.30 miles) is included in the Belleayre Mountain Ski Center Management Unit.

5. Horse Trails (± 2.31 miles):

- a. Neversink/Balsam Lake Mountain Horse Trail - 2.31 miles

6. Cross Country Ski Trails - None.

7. Unmarked Trails

- a. **Old Wood Roads** - These exist in several locations within the unit including McKenley Hollow, Burnham Hollow, Maben Hollow, Flat Brook and Tunis Pond.
- b. **Herd Paths** - Unmarked foot trails which have evolved by use exist sporadically within the unit, the most notable occurring on the southern slopes of Doubletop Mountain.

8. Department Trail Registers (7)

a. Within Unit (4):

- (1) McKenley Hollow
- (2) Biscuit Brook
- (3) Seager (Shandaken Creek)
- (4) Rider Hollow

b. In Management Units Adjacent to this unit (3):

- (1) Hardenburg (Balsam Lake Mountain Wild Forest)
- (2) Mongaup Pond (Mongaup Pond Campground)
- (3) Quaker Clearing (Balsam Lake Mountain Wild Forest) (To be moved to the Balsam Lake Mountain Trailhead Parking Lot when a section of the Neversink-Hardenburgh Trail is relocated.)

9. Club-Maintained Summit Registers (3):

a. Within Unit

- (1) Fir Mountain
- (2) Big Indian Mountain

b. Adjacent to Unit

- (1) Doubletop Mountain

10. Parking Lots - Forest Preserve Access

a. Within Unit (5):

- (1) McKenley Hollow Trailhead - 5 cars
- (2) Burnham Hollow - 5 cars
- (3) Biscuit Brook Trailhead - 8 cars
- (4) Seager Trailhead - 5 cars (on private land)
- (5) Rider Hollow Trailhead - 9 cars

b. In Adjacent Management Units Which Serve This Unit (5):

- (1) Lost Clove Trailhead - 4 cars (on private land)
- (2) Slide Mountain Trailhead - (Slide Mountain Panther Mountain Wilderness) - 25 cars
- (3) Black Bear Road (Willowemoc - Long Pond Wild Forest) - 2 cars
- (4) Mongaup Pond (Mongaup Pond Campground) - 50 cars
- (5) Mongaup-Hardenburgh Trailhead - (Balsam Lake Mountain Wild Forest) - 5 cars
- (6) Quaker Clearing (Balsam Lake Mountain Wild Forest) - 5 cars.

NOTE: The Department has proposed abandonment of the Quaker Clearing Parking Lot and relocation of the Hardenburgh-Neversink hiking trailhead to the end of the Beaverkill Road in the Balsam Lake Mountain Wild Forest UMP.

11. Bridges (3):

a. Oliverea-Mapledale Trail (2):

- (1) Rider Hollow - Metal frame, one lane, truss bridge. Good condition. Pressure treated lumber.
- (2) McKenley Hollow - Log/dimension lumber bridge, double span with railing, good condition.

b. Neversink/Hardenburgh Trail (1):

- (1) (Near beaver dam) - double span logs with board deck, no railing, average condition.

12. Leantos (7):

- a. McKenley Hollow (2)
- b. Biscuit Brook (1)
- c. Fall Brook (1)
- d. Shandaken Brook (Seager) (1)
- e. Rider Hollow (2)

Note: Both the Belleayre Mountain and Hirschland Leantos are in the Belleayre Mountain Ski Center Intensive Use Area.

13. Outhouses (3):

- a. Shandaken Brook (1) - poor condition
- b. McKenley Hollow (1) - poor condition
- c. Fall Brook (1) - good condition

14. Designated Camping Sites (5):

- a. Rider Hollow - 4 sites
- b. Beaverkill - 1 site

15. Vistas (4):

- a. Simon's Rock - Pine Hill/West Branch Trail south of Belleayre Mountain, facing east.
- b. Balsam Mountain (1 on forest preserve, 1 on adjacent private property).
- c. Doubletop Mountain (1 on forest preserve, 2 on adjacent private property).
- d. Beaverkill Range - Mongaup/Hardenburgh Trail

16. Springs (8):

a. Developed (4):

- (1) McKenley Hollow Leanto
- (2) Neversink-Hardenburgh Trail (Fall Brook Leanto)

(3) Shandaken Brook Leanto

(4) Rider Hollow

b. Natural Springs Near Trails (4):

(1) Long Pond - Beaverkill Ridge Trail

(2) Eagle Mountain (south side)

(3) Oliverea/Mapledale - Pine Hill/West
Branch Trail Junction

(4) Balsam Mountain

17. Buildings - None

(Old foundations exist near McKenley Hollow and
Otter Falls)

18. Exterior Boundary Lines - 67.25 Miles:

Shandaken - 16.0 miles

Denning - 18.75 miles

Hardenburgh - 32.5 miles

19. Dumps (Illegal):

a. On County Route 47, near Otter Falls.

20. Gravel Pits - None.

21. Utility Lines

a. Burnham Hollow Parking Lot - New York State
Electric and Gas owns a 30 foot wide easement
across forest preserve land - 270 feet.

b. County Route 47 North - New York State
Electric and Gas utilizes the highway
easement except near Otter Falls, where the
line runs south of the present highway along
the old highway road bed - 7095 feet.

c. County Route 47 South - Central Hudson
utilizes the highway easement across forest
preserve land for 4769 feet (8 poles).

22. Private Easements Traversing Public Land

- a. Rider Hollow - William Parks - spring and pipe easement - short distance from stateline Lot 29 Lausette Tract.
- b. Rider Hollow - Owners of Tax Map Parcel 3-1-20 own an easement for a spring, pipeline and maintenance on Lot 43, Lausette Tract.
- c. McKenley Hollow - The Mountain Gate Lodge owns an easement for a spring, pipeline, water tank, maintenance - water supply, Lot 4 Division 1 and 2 of Livingston Tract.
- d. Hiram's Knob - Owners of Tax Map Parcel #11.001-1-17 own an easement for a spring, pipeline, maintenance on Lot 49 Garretson Tract.
- e. Big Indian Mountain Association Springs - Several lot owners in the Big Mountain Association Development have the right to use and maintain springs and waterlines on the adjacent forest preserve lands.

23. Signs

There are 38 different signs within the Unit. See Appendix C.

24. Historical Markers - None.

25. Supporting Facilities Outside the Unit

- a. Mongaup Pond Public Campground - 160 sites - open Memorial Day through Big Game Season.
- b. Beaverkill Public Campground - 97 sites - open April 1 through Labor Day.
- c. Little Pond Public Campground - 75 sites - open May to November.
- d. DeBruce Environmental Education Camp - providing weeklong environmental education programs. June - August.
- e. Belleayre Ski Center - provides both alpine and nordic skiing opportunities.

- f. Belleayre Mountain Day-Use Area (Pine Hill Lake) - A day use area to be developed by the Department near the Village of Pine Hill. Plans include a swimming area, a picnic area, parking, fishing and other leisure time opportunities.

Most facilities can be found on the Maps in Appendices F, G, H and K.

C. Cultural Resources

There are no known archeological resources within the Big Indian-Beaverkill Range Wilderness Area.

D. Economic Impact

1. Economic Impact of State Ownership on Adjacent Private Land

Private lands adjacent to the Forest Preserve in this unit have in general become desirable properties. Landowners seeking privacy and solitude have protection from development. The State lands provide the unique opportunity of having a "backyard" on which they have no maintenance costs or taxes and yet affords access to a vast outdoor experience. Real estate prices have generally escalated for available properties.

Forest preserve lands are taxed by local jurisdictions. The taxes paid are an important source of revenue to these communities.

Some negative situations do exist occasionally where private lands are adjacent to State Lands. Noise pollution, trespass and littering are annoyances that may occur where hiking trailheads and parking lots are in close proximity to private holdings.

2. Economic Impact of Adjacent Private Lands on State Lands

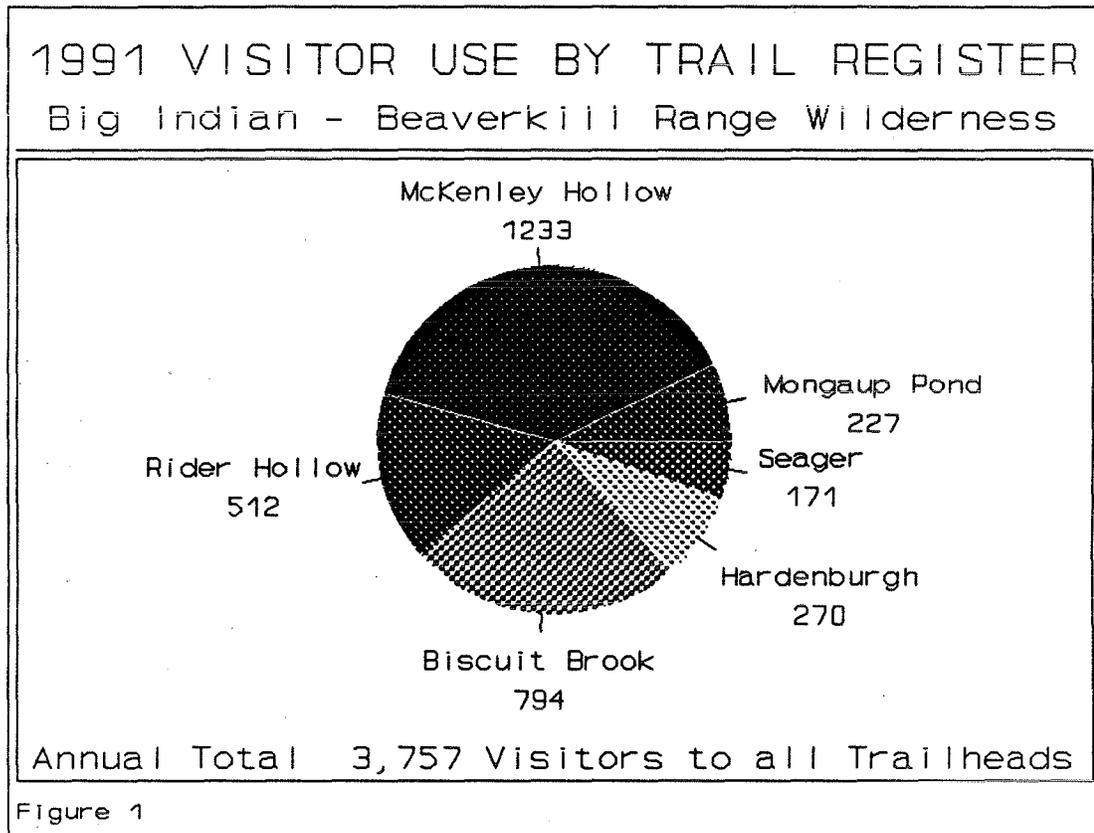
Private holdings generally have slight economic impacts on adjacent state lands. Boundary lines must be marked and maintained to prevent motor vehicle and timber trespass on state lands as well as to maintain the integrity of the forest preserve. Nearby vacation homes may compound the consequences of fire within the unit, necessitating stricter fire prevention and suppression activities.

E. Public Use

The public utilizes the Big Indian-Beaverkill Range Wilderness Area for a variety of primitive recreational pursuits, including hiking, camping/backpacking, hunting, fishing and snowshoeing. This use is recorded by trail registers located at the unit's major access points. (See the Facilities Map, Appendix K.) While use of the registers is voluntary,

they provide a good characterization of use patterns within the unit. These patterns are illustrated in the following figures.

Figure 1 shows the relative levels of use among all trail registers within the unit, McKenley Hollow being the most popular trailhead.



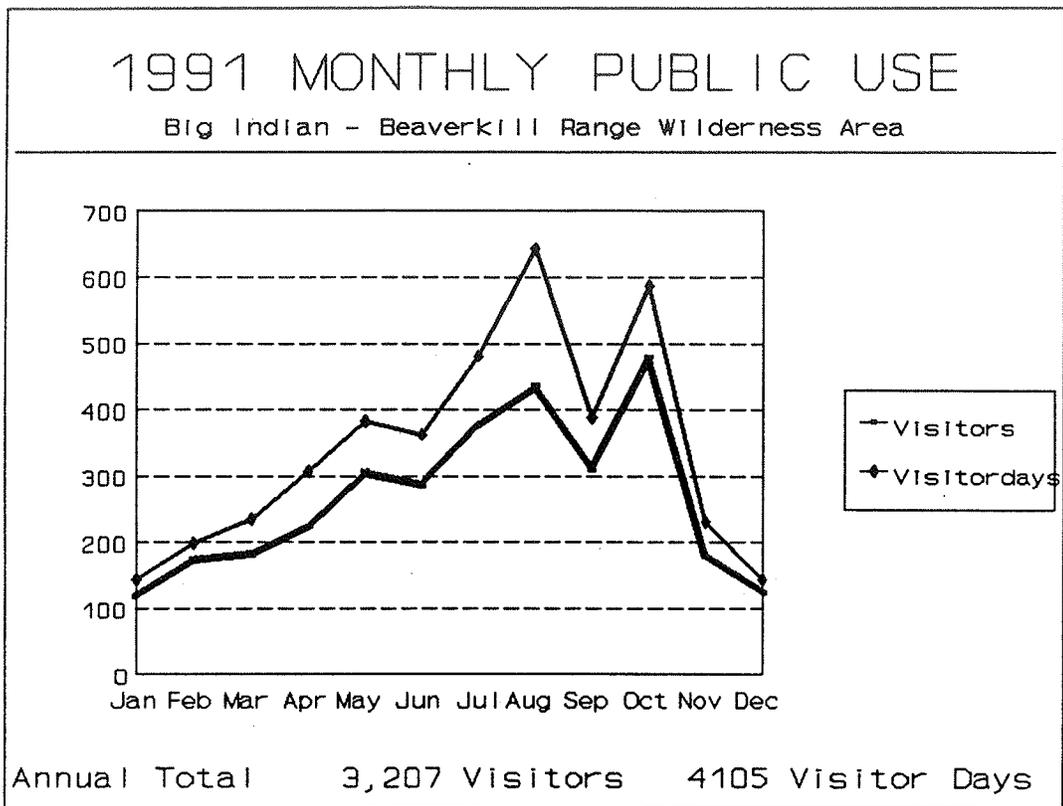


Figure 2

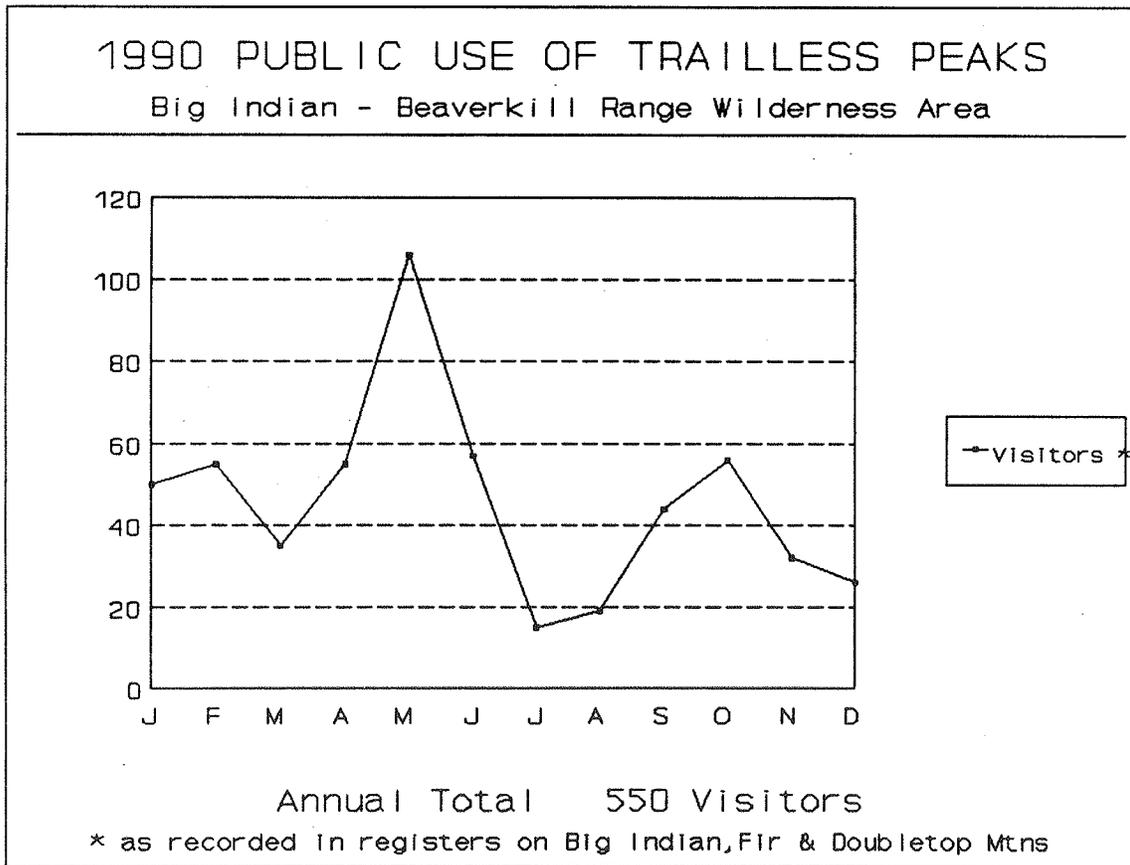


Figure 3

Figure 2 illustrates the seasonal pattern of use over a one year period for the unit's trailheads. This graph illustrates two points: (1) use peaks in August and again in October, and (2) camping is most popular during July and August, with day use being more prevalent during the winter months.

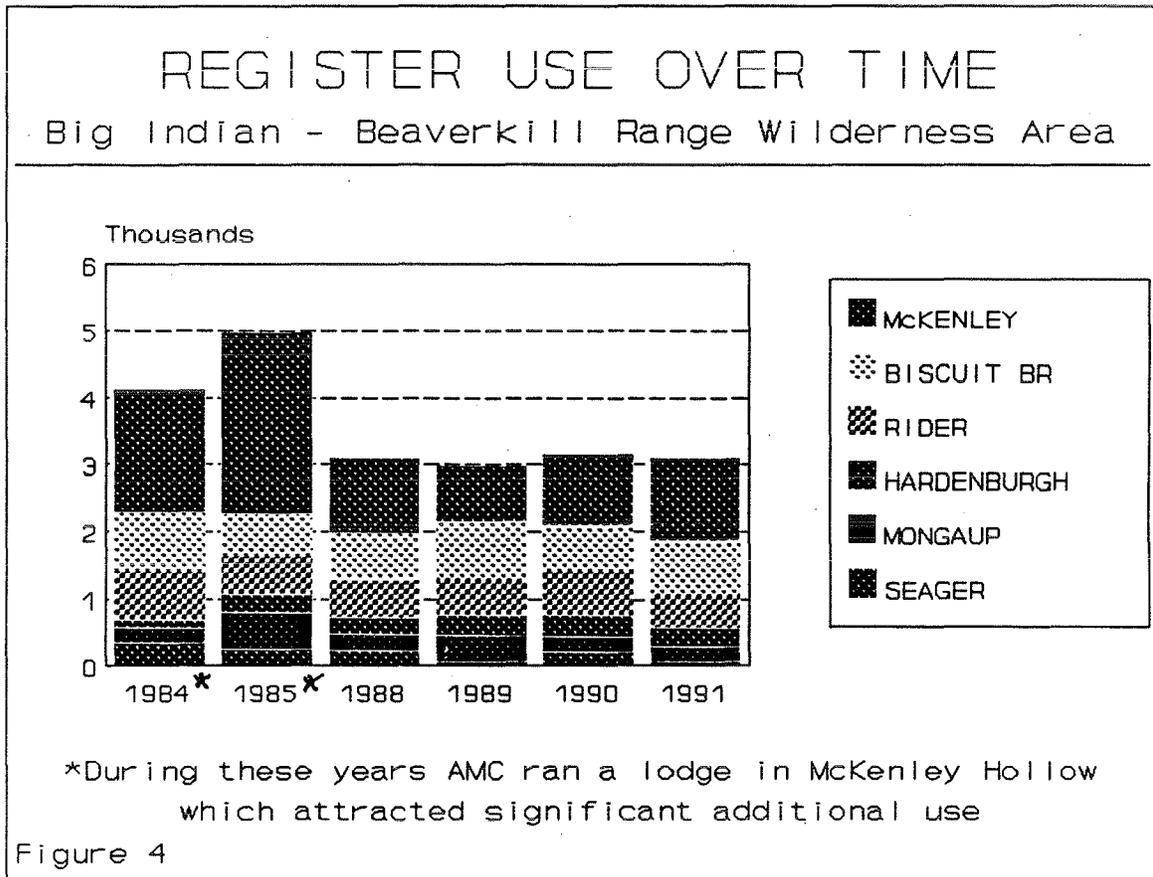


Figure 3 illustrates the seasonal use patterns of the unit's trailless peaks. It is interesting to note that unlike the trailhead registers, the trailless peaks experience the greatest level of use in May, whereas in July and August use is very low.

Figure 4 shows that total annual use has remained relatively constant in recent years.

Because use of both trail and summit registers is voluntary, a correction factor is necessary to determine actual use. This correction factor, the visitor sign-in rate, is likely to vary from register to register depending on the type of user and the character of the area. Studies have shown sign-in rates to vary from as low as 28% to as high as 89% (Leonard 1980). A visitor sign-in rate has not been determined for any of the registers in this unit. However, an estimate of compliance suitable for present management needs has been determined from observations made by the Forest Rangers who patrol the area. Assuming an average sign-in rate of 65% for all registers within the unit, total annual use is estimated to be approximately 5800 visitors for 7200 visitor-days.

F. Capacity of the Resource to Withstand Use

The ability of this unit to withstand use is a function of its physical and biological resources as well as the type of use the area receives.

1. Land Resource

Soil characteristics play a major role in an area's ability to withstand use. Soils within this unit are generally well drained due to the terrain. However, erosion can be a problem on the steeper slopes unless provisions are made to direct water away from and off of trails. Water bars, drainage dips and ditches, and other devices can be used along with vegetation to stabilize trails.

In valley bottoms, upland benches, and other areas with little relief where drainage is poor, ponds, wetlands or seasonally muddy areas result. These areas are poorly suited to many types of recreation unless significant drainage and/or trail hardening is undertaken. Trails should be routed to avoid these areas or where this is not possible, they must be drained, hardened or bridged to prevent erosion, compaction and other adverse impacts.

The ability of this unit to accommodate the public's demand for camping is dependent upon their compliance with the Department's regulations which prohibit camping (a) above 3500 feet in elevation during the frost-free period of the year (March 22 - December 20) and (b) within 150 feet of any trail and water throughout the year except at areas so designated by the Department. Without strict compliance soil compaction and erosion, degradation of vegetation, water pollution and a deterioration of the wilderness character of the area could result.

2. Wildlife Resources

Two types of visitor use are directly associated with wildlife; viewing or photographing wildlife and harvesting wildlife by hunting or trapping. There are no known animal species within this unit that cannot tolerate the occasional presence of humans and thus the ability of the unit to withstand non-consumptive wildlife related use is high.

White-tail deer are the most commonly harvested species in the unit. Although the actual deer harvest from forest preserve lands comprising this unit is not known, Table 1

presents a breakdown of the deer harvest from the three towns in which this unit falls.

TABLE 1: DEER HARVEST FOR 1991 BY TOWN

Deer Management Unit 55	<u>Adult Males</u>	<u>Total Deer</u>	<u>Bucks/ Sq. Mi.</u>
Shandaken	266	274	2.2
Denning	200	212	1.9
Hardenburgh	211	224	2.5

Black bear are also hunted within the unit.

Table 2 presents a breakdown of the black bear harvest in 1991.

TABLE 2: BLACK BEAR HARVEST FOR 1991 BY TOWN

Shandaken	13
Denning	7
Hardenburgh	8

The 1990-91 Furbearer Harvest for the three towns within which this unit falls, based on pelt sealing, is shown in Table 3.

TABLE 3: FURBEARER HARVEST IN 1990-91 BY TOWN

	<u>Beaver</u>	<u>Bobcat</u>	<u>Fisher</u>	<u>Coyote</u>
Shandaken	13	4	0	1
Denning	4	2	0	0
Hardenburgh	0	0	0	2

These numbers represent a relatively light harvest when compared to similar and/or adjoining townships. The current consumptive use of wildlife species by hunters and trappers in this unit appears too low to have any detrimental effect on their populations. While the impacts of "non-game" uses of wildlife populations is not well understood at this time, it appears that present use levels have not had a significant impact on the wildlife species found within the unit.

3. Fisheries Resource

In evaluating the capacity of the fisheries resource within this unit to withstand use, two different aspects must be considered. Brook trout are generally considered to be easily caught and increased pressure could result in a decrease in both the quantity and the average size of fish caught. Secondly, the wilderness experience of a fishing trip to this area may be compromised if the level of use were to increase significantly. Presently the fishing pressure for this area is believed to be low. Given the current statewide regulations and the low level of public use there is little chance that fish populations within this unit are being adversely impacted by anglers.

However, waters within this unit have been identified as being sensitive to acid deposition, especially in the spring during snow melt, due to the very low buffering capacity of the geology of the region. The buffering capacity of a water will determine how much acidity that water can withstand before experiencing a drop in pH. Increased acidity (lower pH) can lower the reproductive potential of fish or kill fish. Over time decreasing pH can change the abundance and distribution of fish and other aquatic organisms.

This situation is being monitored by this agency and others.

III. MANAGEMENT AND POLICY

A. Past Management

Since 1895, management of forest preserve lands within the unit has been guided by the "forever wild" clause of the New York State Constitution (see Constraints). Specific management activities have generally related to fire prevention, fish and wildlife management and recreation. In 1960, the Joint Legislative Committee on Natural Resources began its study of the possibility of designating certain parts of the Forest Preserve as wilderness areas. The following year the Committee completed its wilderness area studies and recommended four such areas be established within the Catskill Forest Preserve, including what was then called the Doubletop - Big Indian Mountain Wilderness Area.

In 1975, a Temporary State Commission to Study the Catskills recommended that the Forest Preserve lands in the Catskills be classified into management units. It specifically urged establishment of the Big Indian-Beaverkill Range Wilderness Area along with the other three wilderness areas recommended by the Joint Legislative Committee in 1961.

In 1985 the Department completed a Catskill Park State Land Master Plan which implemented the recommendations of the Temporary Study Commission. The Master Plan further directed the Department to complete individual management plans which would include specific management objectives for each unit. This unit management plan is the culmination of efforts begun over thirty years ago to establish a Big Indian-Beaverkill Range Wilderness Area.

Recreational use of this unit dates back to the 1800's when many of the Catskill summer resorts like the Grand Hotel were first opened (see History). In the early 1920's the Conservation Commission (an early predecessor of the Department) began clearing and marking existing trails and old lumber roads within the unit as hiking trails.

It is interesting to note that in the first edition of Catskill Trails published by the Conservation Department in 1928 there were more trails within the Big Indian-Beaverkill Range Wilderness Area than there are today. They included the Seager-West Branch Trail, the Pine Hill-Eagle Mountain Trail, the Oliverea-Mapledale Trail, the Lost Clove Trail, the Elk Bushkill-Seager (Shandaken Creek) Trail, the Hardenburg-DeBruce Trail, and the Neversink-Hardenburg Trail. The original Eagle Mountain Range Trail started

in Pine Hill and ended in the col between Eagle and Big Indian where it met the Elk Bushkill-Seager Trail. A separate Seager-West Branch Trail followed the headwaters of the Dry Brook into the Big Indian-Doubletop col, then dropped southward, following the Biscuit Brook for a time, to the West Branch of the Neversink River. The Elk Bushkill Trail from Burnham Hollow to the col between Eagle and Big Indian was abandoned in the mid 1930's. In the mid 1950's the Seager Trail following the headwaters of the Dry Brook was abandoned and a connection from the Eagle Mountain Ridge Trail up over Big Indian Mountain to the West Branch Trail was completed.

The Hardenburg-DeBruce Trail was originally a "motor road" which ran due north from DeBruce to Hardenburg via Mongaup Pond. It apparently faded from use and was subsequently abandoned. In the 1970's a new trail was constructed over the Beaverkill Ridge connecting Mongaup Pond with Hardenburgh. The Long Pond - Beaverkill Ridge Trail was added shortly afterwards.

Since 1990 the Mongaup-Hardenburgh Trail (6.4 miles) has been maintained with the help of volunteers from the New York - New Jersey Trail Conference via a Memorandum of Understanding between the Conference and the Department.

The Mine Hollow Trail was built by Forest Rangers in 1931.

A foot trail up Eagle Mountain from Haynes Hollow was "abandoned" in 1940 (Kudish 1971). Whether or not it was ever marked or maintained by the Department is unknown.

In 1972 the Department promulgated Rule and Regulation Part 190 which prohibited camping within 150 feet of any trail, road, or water, except at areas designated by the Department. In 1977 this regulation was amended to prohibit all camping above 3500 feet in elevation in the Catskill Park except during the period from December 21 to March 21 of each year. Campfires were prohibited above 3500 feet in elevation the entire year.

Wildlife management in this unit has generally been limited to regulations controlling length of season, method of taking and bag limits. These regulations were developed for land areas much larger than the Big Indian-Beaverkill Range Wilderness Area. However, the history of the white-tail deer in the Catskills has particular relevance to this unit.

During the 1800's a combination of year-round hunting pressure and destruction of habitat nearly eliminated the white-tail deer from the Catskills. In 1887 the State legislature passed an act providing for

the establishment of three parks in the Catskills for the propagation of deer. One park of 100 acres was fenced in the Town of Shandaken (near Slide Mountain) and stocked with 45 deer trapped in the Adirondacks. It was hoped that these deer would multiply and that their progeny would serve to reestablish the Catskill population. However, the browse was soon exhausted, and it became necessary to feed them. Furthermore, they failed to reproduce in captivity as well as expected and in July, 1895 they were released.

In 1917 Julius Forstmann, former landowner of the Frost Valley YMCA Camp (see History) constructed the first of two deer parks on his property. Initially 500 acres around Biscuit and Pigeon Brooks were enclosed with a wire strand fence thirteen feet high. In 1939 an additional 300 acres were fenced in around High Falls Creek. Twenty-seven deer were stocked in the original park, the purpose of which was to provide Mr. Forstmann with deer to hunt the year-round. Periodically the park was restocked and when the fence was opened in 1956 (just prior to the sale of the Forstmann estate to the YMCA) approximately 200 deer were liberated. Remains of the fence can still be found along the State/YMCA camp boundary line.

While both the State and Mr. Forstmann were developing these deer parks, the region was slowly

being reoccupied by deer from Sullivan and Orange Counties, as well as from Pennsylvania. While the deer released from the parks may have hastened the expansion of deer into the region, it is unlikely that they were a major factor in today's thriving population.

Past fisheries management have been primarily limited to the occasional stocking of brook, brown and rainbow trout. There are no current stocking policies for any of the water within this unit. All the waters within the unit are currently under the statewide general fishing regulations with no special harvest regulations imposed.

B. Constraints and Issues

1. Constraints

This unit management plan has been developed within the constraints set forth by Article XIV of the New York State Constitution, Article 9 of the Environmental Conservation Law, Title 6 of the Codes, Rules and Regulations of the State of New York, the Catskill Park State Land Master Plan Wilderness Management Guidelines, and established policies for the administration of Forest Preserve lands developed by the Department's division of Lands and Forests.

2. Issues

Several issues are of concern to the public and the Department in development of this plan:

a. Neversink-Hardenburgh Road

Neversink-Hardenburgh Road, also known as the Black Bear Road, in the Town of Denning is an unmaintained town road within this unit. As such, motor vehicle use of the road is considered a non-conforming use, incompatible with the wilderness classification of the unit. The Catskill Park State Land Master Plan states: "Within wilderness areas, all roadways which are not publicly maintained will be closed to public vehicular travel by the Department."

b. Motor Vehicle Trespass of Forest Preserve Lands

There are several woods roads which enter the unit from adjoining private lands which are occasionally used for vehicular travel by the adjoining private landowner. As with the town road previously mentioned, motor vehicle use of these roads is a non-conforming use, incompatible with the unit's wilderness classification. In most

instances, this use is also in violation of New York State Rules and Regulations Part 196.1. An exception of note are the wood roads traversing forest preserve land adjacent to the Big Indian Mountain Association Development in Burnham Hollow. As mentioned in the Man-Made Facilities inventory for the unit, lot owners within this development may have an easement allowing them to use some of these roads which were once a part of their development.

c. Easements

There are several public easements providing access to the unit across private property which have not been marked and/or maintained by the Department. (See B. Man-Made Facilities, 1-d.) Consequently it is difficult for the public to exercise their right to use these easements.

d. Lean-tos

Most of the leantos in this unit are located much closer to trail and/or water than the 150 foot setback for camping required by the Department. Many also tend

to be only a short distance from trailhead. This situation is contrary to the Department's goal of minimizing the user's impact on the natural resources of the unit. Leantos in close proximity to the trail detract from the wilderness character of the area in that they diminish the user's sense of solitude. They also contradict the Department's wilderness management goals which stress the self sufficiency of the user(s).

e. Tunis Pond

Very little is known about this, the only ponded water in the unit. No fish surveys have been undertaken. It may now, or in the past, have provided habitat for brook trout. If so, it would be one of only two such ponds in designated wilderness areas in the Catskills (Echo Lake in the Plateau Mountain - Indian Head Mountain Wilderness Area is, at present, the only wilderness pond with a known brook trout fishery).

f. Trail Management/Maintenance

While there is significant potential for erosion and other trail maintenance problems on the trails traversing this unit, very little of the potential has been realized due to the low levels of public use.

However, two problem areas have been identified which are in need of attention.

Southern sections of the Pine Hill/West Branch Trail, particularly the segment from Big Indian Mountain south to the Biscuit Brook Leanto, has several drainage problems. In some instances the trail is poorly defined.

The Seager Trail, from the trailhead eastward to the Dry Brook crossing (approximately 1 mile) has several problems. Some parts are poorly defined. Stream crossings (Drury Hollow, Flatiron Brook and Dry Brook) can be very difficult in times of high water. One section traverses a very steep side-slope which is collapsing into the Dry Brook. A threatened plant species is known to occur in close proximity to the trail.

g. Land Acquisition/Easements

As large as the Big Indian-Beaverkill Range Wilderness Area is, it still owes much of its wilderness character to the adjoining private lands. Many of these private lands remain in large, undeveloped tracts which are managed for forest products, recreation or other uses which are compatible with or complement the wilderness area. In the future it may be desirable for the Department to acquire easements or fee ownership in some of these lands to protect this relationship. Any such acquisitions will be governed by the Conserving Open Space in New York State plan (June 1992).

h. Vistas

There are very few vistas within this unit. This, in part, explains the low level of public use. The Department's wilderness management policy prohibits tree cutting for the purpose of opening new scenic vistas.

i. Trailless Peaks

There are two trailless peaks above 3500 feet within this unit which are attractive destinations for some hikers.

These peaks provide a challenging wilderness experience which would be significantly diminished if a herd path or paths were to develop.

A hiking club (the Catskill 3500 Club) maintains summit registers (canisters) on two summits within this unit: Big Indian and Fir. This has been permitted via an informal agreement between the Club and the Department.

j. Belleayre Mountain Ski Center

Management of the northern end of this unit is dependent upon the management of the Belleayre Mountain Ski Center. Northern access, including that via Cathedral Glen, Woodchuck Hollow and Lost Clove are all within the Ski Center boundaries. However, because of the complexities in management of the Ski Center itself, peripheral facilities such as the hiking trails mentioned above do not receive the attention they might otherwise if included in the adjoining wilderness area.

C. Goals and Objectives

1. Goals

- a. **Primary Goal** - to preserve and protect the wilderness character of the unit, especially its natural plant and animal communities, in such a way that man's influence is not apparent.
- b. **Secondary Goal** - to provide opportunities for a primitive and unconfined type of outdoor recreation, favoring the opportunity for solitude and other experiences unique to and/or dependent upon wilderness.

2. Objectives

a. Land Management Objectives

- (1) To effect abandonment of the Black Bear Road (Town of Denning) and the Hardenburgh-Neversink Road (Town of Hardenburgh) as they traverse forest preserve lands so as to prohibit motor vehicles within this wilderness area.
- (2) Resolve the issue of motor vehicle use of wood roads adjoining the Big Indian Mountain Association development in Burnham Hollow.

- (3) Eliminate incompatible uses which detract from the wilderness character of the unit, especially the illegal use of motor vehicles and snowmobiles.
- (4) Maintain boundary lines to clearly identify public ownership and discourage trespass on private land.
- (5) Selectively acquire additional lands contiguous to the unit which will consolidate the State's holdings, simplify boundary lines and/or protect unique areas, provide additional or improved access and otherwise enhance the area. Any such acquisitions will be governed by the Conserving Open Space Plan in New York State plan (June 1992).
- (6) Adequately protect the unit from wildfire.

b. Wildlife Management Objectives

- (1) Maintain all native wildlife species at levels compatible with their natural environment.
- (2) Maintain hunting, trapping and other wildlife - related recreational activities.

c. Fisheries Management Objectives

- (1) To preserve, enhance, and where needed restore, fisheries habitats to achieve and perpetuate the historic quality of the fish communities found in all streams and ponded waters occurring within the unit.
- (2) Emphasize the quality of the angling experience over quantity of use, consistent with wilderness area management guidelines.
- (3) Identify future management objectives based upon the ongoing fisheries investigations of this area.

d. Public Use Management Objectives

- (1) Provide primitive recreation opportunities only to the extent that they do not infringe upon the area's naturalness and its ability to provide a high degree of solitude.
- (2) Monitor the level and intensity of public use. Take appropriate steps to prevent overuse and degradation of the area.

- (3) Educate visitors to use and enjoy the wilderness without adverse environmental impacts.
- (4) Limit trail maintenance and improvements to those actions necessary to provide access to the unit and/or to protect the natural resources of the unit from degradation. Both physical and mental challenges must be preserved.
- (5) Insure that trailless areas, especially summits above 3500 feet in elevation remain trailless.

e. Water Quality Management Objectives

- (1) Maintain water courses and ponds in their current natural condition, subject to natural forces and free of human-caused contaminants.

IV. PROJECTED USE AND MANAGEMENT PROPOSED

A. Facilities Development and/or Removal

PROJECT #1: Remove McKenley Hollow Leanto #1 (the leanto closest to the trailhead). This leanto, which is less than one half mile from the trailhead parking area and within feet of McKenley Hollow Brook poses several problems. Its close proximity to the trailhead attracts a user who more often than not is seeking something other than a "wilderness experience." In fact, the short and relatively easy hike to the leanto encourages parties and other uses more appropriate to a developed campground. Its close proximity to the stream creates a threat to the area's water quality.

PROJECT #2: Erect new outhouses near McKenley Hollow Leanto #2, Biscuit Brook Leanto, and both Rider Hollow Leantos. Outhouses are necessary at all of these locations to provide an appropriate method for users to dispose of human waste. Each will be located at least 150 feet from water and trail. Unobtrusive designs compatible with the wilderness classification will be used.

PROJECT #3: Acquire landowner permission, an easement, or fee title to land near the Old Pine Hill Railroad Station and construct a parking lot to accommodate 10 vehicles, as first proposed in the Belleayre Mountain Ski Center Unit Management Plan (July 1985). This parking lot will provide access to both the Pine Hill West Branch Trail and the Cathedral Glen Trail. By providing an appropriate parking area, nuisance incidents of indiscriminate parking will be minimized and users will be more likely to utilize both these trails (the environmental impacts of this parking lot were evaluated in the Belleayre Mountain Ski Center UMP).

PROJECT #4: Remove the illegal dump on forest preserve land adjacent to Ulster County Route 47, near Otter Falls. This small dump may continue to attract additional dumping and should be removed immediately. This can probably be accomplished with manual labor.

B. Maintenance and Rehabilitation of Facilities

PROJECT #1 - TRAILS: Maintain the existing 29.4 miles of marked hiking trails. Annual routine maintenance will consist of marking, cleaning waterbars, brushing and small blowdown removal with hand tools. In keeping with the wilderness character of the unit and the

Department's policy prohibiting the use of motorized equipment for routine maintenance (in wilderness areas) large blowdowns will be removed every three - five years or with hand tools.

In addition to routine maintenance, the following trail maintenance/improvement projects are proposed:

- a. Pine Hill - West Branch Trail: from Biscuit Brook Leanto north to Big Indian Mountain (2 miles). Construct waterbars, rock steps, drainage ditches and other trail improvements to prevent erosion and otherwise minimize the impacts of users on the trail. All improvements will be accomplished using native materials, preferably rock. In some instances where the trail is poorly defined, where the pitch is especially steep (3200-3400 feet in elevation) or where significant erosion problems exist a short trail relocation will be considered.

- b. Seager/Big Indian Trail: With landowner consent, reroute the trail from the trailhead at Seager to the Dry Brook Crossing (1.25 miles). Explore opportunities for rerouting of either this entire section or parts thereof to solve the various problems

associated with this trail (see Section III B. 2. Issues (f)). Public use of this trail is very low and does not warrant extensive work. If an agreement can be reached with the private landowner involved, some type of reroute utilizing old roads where new trail construction would be minimal will be implemented. Any reroute will avoid significant habitats, especially those of the threatened plant species mentioned earlier.

PROJECT #2: Continue to maintain the Mongaup - Hardenberg Trail utilizing volunteers as set forth in the Memorandum of Understanding the Department has with the New York - New Jersey Trail Conference. Since 1990 the Trail Conference has undertaken the routine maintenance of this trail. They are subject to the same constraints as the Department with regards to tree cutting and the use of motorized equipment as well as other restrictions agreed to by both the Department and the Conference. This agreement has proven beneficial to the Department as well as the hiking public. Large blowdown removal, bridging and other major maintenance tasks will continue to be the responsibility of the Department. (A copy of the Volunteer Trail Maintenance M.O.U. is on file at the Department's Region 3 Office.)

PROJECT #3 - LEANTOS: With the exception of McKenley Hollow Leanto #1 which is recommended for removal, the Department proposes to maintain the remaining six leantos within this unit for the five year planning period. Most of these leantos should be considered for relocation farther away from water and trail (at least 150 feet) when replacement is necessary or sooner should problems of overuse and abuse arise. The Rider Hollow leantos in particular should be closely monitored due to their close proximity to the trailhead. Rider Hollow leanto #1 should not be replaced when it deteriorates to the point that it can no longer be maintained in a safe condition.

PROJECT #4 - OUTHOUSES: The existing outhouses near the Fall Brook and Shandaken Brook Leantos will be maintained. While the Fall Brook Outhouse is in relatively good condition and requires only routine maintenance, the Shandaken Brook Outhouse is in poor condition and must be replaced. The new outhouse will be located at least 150 feet from water and trail.

PROJECT #5 - SPRINGS: Maintain all existing developed springs within the unit. These springs have historically provided users with water. The pipes prevent the surrounding springhole/seep from being trampled.

PROJECT #6 - BRIDGES: Maintain the two bridges on the Oliverea/Mapledale Trail. These two bridges provide appropriate crossings over steep-sided streams. The McKenley Hollow Bridge is at the periphery of the wilderness area (straddling the forest preserve/public easement boundary), and thus does not detract from the wilderness character of the unit. However, the steel truss design of the Rider Hollow bridge is not appropriate in a wilderness area. When the bridge is in need of replacement a design incorporating native materials should be utilized.

PROJECT #7 - PARKING AREAS: All existing parking areas within this unit should continue to be maintained. They will occasionally require grading/gravel and repair as well as litter pick up.

PROJECT #8 - VISTAS: Scenic vistas at Simons Rock, Balsam Mountain, Doubletop Mountain and Beaverkill Ridge should all be maintained in the least obtrusive

method possible. While occasional tree cutting may be necessary, brushing and the pruning of limbs will be the dominant practice, as these are intended to be "window vistas" rather than broad panoramas.

C. Public Use Management and Controls

PROJECT #1 - ROAD ABANDONMENT: Effect abandonment of the Black Bear Road (Town of Denning) and the Neversink-Hardenburgh Road (Town of Hardenburgh) as they traverse forest preserve land so as to prohibit motor vehicle and snowmobile use within the wilderness area. The abandonment itself would be accomplished by the Department utilizing Section 212 of the Highway Law. Once abandoned, the southeast end of the road will be barricaded with large rocks at the State land boundary (see facilities map, Appendix K). The northwest end of the road will be gated at the State land boundary near Vly Pond in the adjoining Balsam Lake Mountain Wild Forest (as per the Balsam Lake Mountain Wild Forest Unit Management Plan).

PROJECT #2 - NONCONFORMING USE: Negotiate with lot owners in the Big Indian Mountain Association (B.I.M.A.) Development for their right to use motor vehicles on forest preserve land which was once a part of the B.I.M.A. development. If negotiations are

unsuccessful, and the Department is unable to purchase these rights then the lands affected would have to be reclassified as wild forest rather than wilderness (motor vehicle use within a wilderness area is considered a non-conforming use - see Catskill Park State Land Master Plan).

PROJECT #3 - ACCESS EASEMENTS: Negotiate with the appropriate private landowners to develop (mark with trailmarkers and/or signs) easements which the Department already owns for foot access across private land to state land in Maben Hollow and Haynes Hollow.

PROJECT #4 - SUMMIT REGISTERS: Develop a Memorandum of Understanding between the Department and the Catskill 3500 Club for the continued existence of summit registers (canisters) on trailless peaks above 3500 feet within this unit and throughout the Catskill Forest Preserve. The canisters have been in use for over twenty years. Many people enjoy the opportunity to record their achievements as well as to read about the adventures of their fellow bushwhackers. For others, the canister simply confirms that they are indeed on the summit. For the Department, the canisters provide an important record of public use. However, there are some disadvantages associated with

the canisters. They attract use which may, over time, result in a definitive herd path to the summit. Their presence could be considered an intrusion upon the wilderness character of the area. The Memorandum of Understanding will seek to minimize these adverse impacts.

PROJECT #5 - CAMPING: Maintain three of the four existing Designated Campsites in Rider Hollow and the one existing near the Upper Beaverkill. Designate additional campsites in McKenley Hollow (1) and Biscuit Brook (1). See the Facilities Maps in Appendices F, G and J for exact locations. Although within 150 feet of trail and water, these sites have been carefully located to minimize the physical impact on the watershed and the visual impact on other users with one exception. One of the sites in Rider Hollow is much too close to both the brook and the trail and will be eliminated. Group camping permits will not be written for any of these Designated Campsites.

An additional campsite will also be sited midway along the Pine Hill-West Branch Trail, possibly near Haynes Mountain. Unlike the designated campsites described above, this site will be at least 150 feet from trail and water. A short path from the main trail will be marked to provide access. By providing an

appropriate campsite, the Department hopes to discourage the use of inappropriate sites (sites less than 150 feet from trail and water) in this area. An unobtrusive outhouse will be erected near this campsite to provide for the appropriate disposal of human waste.

PROJECT #6 - GROUP CAMPING: Department Rules and Regulation Part 190.4(e) states: "No group of 10 or more individuals may camp on State lands at any time except under permit issued by the Department." In recent years the Department has not issued Group Camping Permits to groups of more than 12 individuals wishing to camp in the Big Indian-Beaverkill Range Wilderness Area. The Department will continue this policy. Furthermore, as stated above, no group camping permits will be issued for any of the designated campsites within this unit. Twelve was chosen as a number that would be economically feasible for organized groups yet reasonable for maintaining the wilderness character of the area.

PROJECT #7 - INFORMATION BOARDS: Erect and maintain information boards at the following trailhead/access points: Rider Hollow, Biscuit Brook, McKenley Hollow and Burnham Hollow. Each board may vary depending on the needs associated with their location, but all will

contain the following:

- Map of the area with trailhead location clearly marked
- Rules and Regulations governing use
- Proper methods of human waste disposal
- Information on Giardia and alternatives for treating water
- Emergency phone numbers as well as the names, addresses and phone numbers of local Forest Rangers and the Department's regional headquarters.

PROJECT #8: Erect a trail register on the Neversink - Hardenburgh Trail just north of the barrier to be erected on the Black Bear Road (Recommendation #1).

PROJECT #9: Abandon the trailmarking of the following public roads: Lost Clove Road, McKenley Hollow Road and Rider Hollow Road. The Department maintains parking areas at the terminus of all of these roads, and thus most users drive rather than hike these road segments. The Department will continue to maintain directional signs along Ulster County Route 47 to clarify trailhead access, but trailmarkers along the roads are unnecessary.

PROJECT #10: Replace the gate at Rider Hollow with large rocks. This gate is considered a non-conforming structure as even administrative use of motor vehicles is prohibited within wilderness areas (with some minor exceptions).

PROJECT #11: Abandon the Neversink/Balsam Lake Mountain Horse Trail. Portions of the trail near the headwaters of the Beaverkill have deteriorated to the point that it is no longer suitable for horse travel. The level of use by equestrians is very low. Both the northern end, passing through the Balsam Lake Mountain Wild Forest, and the southern end, traversing the Willowemoc-Long Pond Wild Forest, have already been abandoned.

PROJECT #12: Barricade the woods road which connects the old Tyler Place Road with the Neversink/Hardenburgh Trail (north of the Fall Brook leanto). Large rocks will be placed where the road meets forest preserve land just west of its junction with the old Tyler Place Road.

BICYCLE USE:

At present, the Department's policy - by order of the Commissioner - is to prohibit bicycles within Catskill Wilderness Areas until such time as a policy on bicycle use is developed (possibly in a revised Catskill Park State Land Master Plan). However, there are no rules and regulations regarding the use of bicycles on State land which might be used to implement this policy. If, in the future, a rule and regulation is enacted which would restrict the use of bicycles to trails designated and marked by the Department, it is recommended that no such trails be designated within the Big Indian-Beaverkill Range Wilderness Area.

D. Fish and Wildlife Management

1. Fisheries

All waters within this unit will continue to be managed under current statewide general fishing regulations, with no special harvest restrictions imposed. However, in the event that Bureau of Fisheries finds that fishing conditions decline, the following management options may be deemed necessary to improve the quality of the angling experience, consistent with policy and guidelines for management of wilderness areas.

- Special regulations may be necessary in order to achieve the fisheries management objectives developed for this unit.
- In instances where natural fish communities cannot be protected, maintained or restored due to human caused disturbances, a waterbody-specific stocking plan may be implemented. Stocking would be limited to indigenous species or species historically associated with the Catskill Park.
(Department Policy 91-31: Fishery Management in Wilderness, Primitive and Canoe Areas; October 1991).
- In the event that acid precipitation creates acidic conditions which threaten fish populations within the unit, a liming program may be implemented to neutralize acidic waters. Any such program will be consistent with the Department's Revised Liming Policy (June, 1991). The Policy has established a series of qualifying criteria, all of which must be met, prior to any liming treatment. At this time, what potential any waters within this unit have to meet these criteria is unknown.

Because little is known of the fisheries resource in Tunis Pond, no specific management projects are proposed, other than fish and water surveys to document the pond chemistry and fisheries resource. An analysis of the present conditions as well as a determination of what are the natural conditions of this pond will be completed in the five year planning period.

2. Wildlife

No wildlife management projects are planned specifically for the Big Indian-Beaverkill Range Wilderness Area. The unit falls within Wildlife Management Unit #11 and Deer Management Unit #55. The management of wildlife populations within the wilderness area will be limited to the hunting and trapping regulations developed for these broader management units.

A citizen Task Force on deer management in Deer Management Unit 55 will be continued in 1992. The current management objective for the deer population in this unit is a harvest of 2.0 bucks per square mile. The citizens task force will be asked to assess the objective and provide a population objective considering all social and economic constraints.

E. Wild, Scenic and Recreational Rivers

There are no water courses in this unit classified under the provisions of the Wild, Scenic and Recreational Rivers Act, Title 15 of the Environmental Conservation Law.

F. Fire Management

The Department is charged with protection from fire in the Big Indian-Beaverkill Range Wilderness Area under provisions of Article 9 of the Environmental Conservation Law. The Towns of Shandaken, Hardenburgh and Denning are all fire towns. It is the Department's policy to extinguish all fires regardless of cause, land classification or ownership. This policy will dictate the fire management program for the Wilderness Unit.

Fire detection has been handled in the past by Fire Tower Observers at the Balsam Lake Mountain and Red Hill Fire Towers. Limited funding for fire detection has prevented the Department from manning either of these towers in recent years.

Fire prevention, detection and suppression is the responsibility of the Forest Rangers assigned to the Shandaken, Hardenburgh and Ellenville ranger districts.

G. Administration

1. Staffing

Forest Ranger Staffing:

The Big Indian-Beaverkill Range Wilderness Area falls within two forest ranger districts -- Hardenburgh and Shandaken. The most dominant, positive impact on the unit has been the presence of these forest rangers. They are the Department's day to day field managers, watching over the area, interacting with the public, enforcing the Department's Rules and Regulations as well as Environmental Conservation Law, and undertaking fire detection and suppression. Their continued presence is essential in the management of this unit.

Supplement Forest Ranger patrols of this unit with a seasonal Assistant Forest Ranger. This person will be hired from May 15 to November 15 of each year, and their work week will be scheduled so as to include weekends and holidays when public use is highest. Mid-week work would include boundary line maintenance.

Operations Staffing:

Current staffing in the Division of Operations is inadequate to undertake the necessary trail, parking lot, leanto and sign maintenance within this unit. In recent years the Department has not received enough funding to hire even one person for a complete year to undertake trail and leanto maintenance in Region 3.

The Department's policy prohibiting the use of motorized equipment for routine maintenance in wilderness areas further reduces the effectiveness of a limited staff. Additional Operations staff will be required to undertake the maintenance of existing facilities as well as to implement the modest projects proposed in this plan.

Hire two seasonal maintenance assistants to work under the supervision of the existing Trails Supervisor. They will be hired from April 1 to December 15 of each year. Their time will be split between this unit (40%) and the Slide Mountain - Panther Mountain Wilderness Area (60%). The two laborers will be provided with a vehicle and the necessary hand tools to undertake trail and leanto maintenance.

The existing temporary trails supervisor position will be upgraded to a permanent Conservation Operations Supervisor I position. Not only is a permanent person necessary to supervise the maintenance crews proposed in this and other regional forest preserve unit management plans, the degree of responsibility inherent in this position has also increased.

Fish and Wildlife Staffing:

The existing regional fish and wildlife management staff is adequate to handle all present and proposed management activities requiring their input and assistance.

Preserve Management Staffing:

The current supervisory staff is not adequate to manage this and other Forest Preserve units in Region 3.

The Preserve Manager position, vacant since September, 1990 will be filled to coordinate unit management planning and implementation, forest preserve management and land acquisition within the region.

2. Education

PROJECT #1 - BROCHURE: Develop a brochure describing the southern Catskill wildernesses: The Slide Mountain - Panther Mountain and Big Indian-Beaverkill Range Wilderness Areas. A map depicting both units, rules and regulations governing use, a description of the trail system and minimum impact camping techniques will all be included.

Trailhead information boards are planned at major trailheads. (See C. Public Use Management and Controls, Recommendation #7.)

H. Land Acquisition

As mentioned earlier in the Issues section, the Big Indian-Beaverkill Range Wilderness Area owes much of its wilderness character to the adjoining undeveloped private land. In the future, should any of these lands be faced with development pressures the Department will consider protecting them with a conservation easement to preserve their open space character while allowing traditional compatible uses such as forest management to continue.

In a few instances, fee acquisition may be necessary to accomplish management objectives. For example, the parking lot proposed for the northern end

of the Pine Hill - West Branch Trail near the Old Pine Hill Railroad Station. Acquisition may also be necessary in Maben Hollow and Haynes Hollow to improve access to State land by providing appropriate parking areas. Acquisition of public fishing rights in Haynes Hollow, on Dry Brook and along the West Branch of the Neversink River will also be pursued.

I. Catskill Park State Land Master Plan Amendments

It is recommended that the master plan develop a policy with regards to the use of bicycles on forest preserve land. It is further recommended that in general, the use of bicycles within wilderness areas is inappropriate and that their use should be limited to abandoned town roads or other old roads which are found to be appropriate for their use in the development of a unit management plan for that particular wilderness area.

J. SEQR Requirements

The actions proposed in this unit management plan will not result in any significant environmental impacts and thus a negative declaration was filed, a copy of which can be found in Appendix A.

K. Relationship of This Unit With Other Forest Preserve Units

Five different Forest Preserve units share a common boundary with this unit: the Belleayre Mountain Ski Center abuts the north end of the unit, the Slide Mountain - Panther Mountain Wilderness Area lies directly east of the unit, the Willowemoc - Long Pond Wild Forest adjoins the south end of the unit along with the Mongaup Pond Campground, and the Balsam Lake Mountain Wild Forest abuts the western side of the unit. The wild forest and intensive use units abutting this unit offer more developed recreational opportunities with better access for people not seeking the solitude or the challenges of the more remote wilderness.

The Slide Mountain - Panther Mountain Wilderness uniquely compliments this unit. With its panoramic summit vistas and the allure of the highest peaks in the Catskills, it draws the greatest number of visitors of any wilderness unit in the Catskills. This, in part, has resulted in a low level of public use in the Big Indian-Beaverkill Range Wilderness -- thus enhancing the opportunities for solitude in this unit.

V. SCHEDULE FOR IMPLEMENTATION/BUDGET

The following schedule will be implemented over the five year period of the plan, if funding is provided.

Estimated costs are in addition to normal program funding.

<u>YEAR</u>	<u>PROJECT</u>	<u>ESTIMATED COST</u>
I	Erect 2 Outhouses: one in McKenley Hollow, one in Rider Hollow	\$ 600
	Remove the illegal dump on Ulster County Route 47	\$ 300
	Effect abandonment of the north end of the Black Bear Road - Barricade with rocks	\$ 800
	Determine what roads are open to motor vehicle use by lot owners in the Big Indian Mountain Assoc. Development. Barricade roads which they can not use	\$ 2,000
	Eliminate one of the designated campsites in Rider Hollow. Designate two new campsites: one in McKenley Hollow and one near Biscuit Brook	\$ 200
	Erect an Information Board at the Rider Hollow Trailhead	\$ 1,500
	Abandon the Neversink-Balsam Lake Mountain Horse Trail	\$ 0
	Assistant Forest Ranger (May 15 to November 15)	\$ 9,100
	Preserve Manager (22% of time)	\$ 8,000
	Conservation Operations Trail Supervisor (22% of Time)	\$ 4,300
	Maintenance Crew (2 person; April 1 to December 15; 40% of time); vehicle and tools	\$ 25,000
	Annual maintenance materials	<u>\$ 3,000</u>
	TOTAL EXPENSES FOR YEAR I	\$ 54,800

<u>YEAR</u>	<u>PROJECT</u>	<u>ESTIMATED COST</u>
II	Erect 2 Outhouses: one in Rider Hollow, one near Biscuit Brook Leanto	\$ 700
	Remove the McKenley Hollow #1 Leanto and Outhouse	\$ 1,000
	Construct waterbars and make other improvements to prevent erosion on the Pine Hill - West Branch Trail (2 miles)	\$ 1,000
	Conduct fisheries and pond chemistry surveys of Tunis Pond	\$ 1,000
	Develop a M.O.U. with the Catskill 3500 Club for the continued maintenance of the summit registers (canisters)	\$ 0
	Erect an Information Board at the McKenley Hollow Trailhead	\$ 1,600
	Erect a Trail Register on the Neversink-Hardenburgh Trail	\$ 200
	Develop a campsite and erect an outhouse on the Pine Hill-West Branch Trail near Haynes Mountain	\$ 500
	Assistant Forest Ranger (May 15 - November 15)	\$ 9,400
	Preserve Manager (22% of time)	\$ 8,400
	Conservation Operations Trail Supervisor (22% of Time)	\$ 4,500
	Maintenance Crew (2 person; April 1 to December 15; 40% of time)	\$ 9,950
	Annual maintenance materials	<u>\$ 3,300</u>
	TOTAL EXPENSES FOR YEAR II	\$ 41,550

<u>YEAR</u>	<u>PROJECT</u>	<u>ESTIMATED COST</u>
III	Replace the Outhouse at Shandaken Creek	\$ 350
	Develop the Haynes Hollow access easement for use by the public	\$ 1,000
	Erect an Information Board at the Biscuit Brook Trailhead	\$ 1,700
	Purchase the Big Indian Mountain Assoc. easement which allows lot owners to use motorized vehicles on old roads crossing forest preserve land in Burnham Hollow	\$?
	Barricade woods road beyond old Tyler Place Road with large rocks	\$ 500
	Develop a brochure describing southern Catskill Wilderness Areas	\$ 4,000
	Replace the gate at Rider Hollow with large rocks	\$ 1,000
	Assistant Forest Ranger (May 15 - November 15)	\$ 9,850
	Preserve Manager (22% of time)	\$ 8,800
	Conservation Operations Trail Supervisor (22% of Time)	\$ 4,750
	Maintenance Crew (2 person; April 1 to December 15; 40% of time)	\$ 10,450
	Annual maintenance materials	<u>\$ 3,700</u>
	TOTAL EXPENSES FOR YEAR III	\$ 46,100

<u>YEAR</u>	<u>PROJECT</u>	<u>ESTIMATED COST</u>
IV	Construct a 10 car parking lot in Pine Hill	\$ 10,000
	Relocate 1.25 miles of the Seager-Big Indian Trail as it follows Dry Brook	\$ 2,000
	Erect an Information Board at the Burnham Hollow Parking Lot	\$ 1,200
	Assistant Forest Ranger (May 15 - November 15)	\$ 10,350
	Preserve Manager (22% of time)	\$ 9,300
	Conservation Operations Trail Supervisor (22% of Time)	\$ 5,000
	Maintenance Crew (2 person; April 1 to December 15; 40% of time)	\$ 11,000
	Annual maintenance materials	<u>\$ 4,100</u>
	TOTAL EXPENSES FOR YEAR IV	\$ 52,950

<u>YEAR</u>	<u>PROJECT</u>	<u>ESTIMATED COST</u>
V	Develop the Maben Hollow access easements for use by the public	\$ 500
	Abandon the trailmarking of the following public roads: Lost Clove Road, McKenley Hollow Road and Rider Hollow Road	\$ 200
	Assistant Forest Ranger (May 15 - November 15)	\$ 10,900
	Preserve Manager (22% of time)	\$ 9,800
	Conservation Operations Trail Supervisor (22% of Time)	\$ 5,250
	Maintenance Crew (2 person; April 1 to December 15; 40% of time)	\$ 11,550
	Annual maintenance materials	<u>\$ 4,500</u>
	TOTAL EXPENSES FOR YEAR V	\$ 42,700
TOTAL ESTIMATED COST FOR 5-YEAR PLAN		<u>\$238,100</u>

VI. BIBLIOGRAPHY AND REFERENCES

- Adams, Arthur Grey, and others. Guide to the Catskills with Trail Guide and Maps. Walking News, Inc., New York, New York 1975.
- Aley, Laura. The Valley, Facts and Legends on Big Indian and Oliverea. The Big Indian - Oliverea Fire Department Auxiliary. 4th edition, December 1990.
- Andrle, Robert F. and Janet R. Carroll, eds. The Atlas of Breeding Birds in New York State. Cornell University Press, Ithaca, New York, 1988.
- Bennet, John and Seth Masia, Walks in the Catskills, Eastwoods Press, Inc., New York, 1974.
- Best, Gerald M. The Ulster and Delaware: Railroad through the Catskills, Golden West Books, San Marino, CA, 1972.
- Brown, J. A German Family's Influence on the World, Frost Valley YMCA Camp, 1987.
- Chambers, Robert E., Integrating Timber and Wildlife Management, State University of New York College of Environmental Science and Forestry, Syracuse, New York, 1983.
- Clearwater, Alphonso Trumbour, The History of Ulster County, New York, 1907.
- Considine, Thomas and Thomas Frieswyk, Forest Statistics for New York, U.S.D.A. Forest Service Resource Bulletin NE-71, 1982.
- DeLisser, R. Lionel. Picturesque Ulster, Kingston, New York, 1896.
- Evers, Alf. The Catskills - From Wilderness to Woodstock, 1972.
- Ferguson, Roland and C. E. Mayer. The Timber Resources of New York, U.S.D.A. Forest Service Resource Bulletin NE-20, 1970.
- Francis, Austin M., Catskill Rivers, Winchester Press, NJ, 1983.
- Hasbrouck, Kenneth E., ed. History of Ulster County: 1883-1983, 1984.
- Hendee, John C., George H. Stankey and Robert C. Lucas. Wilderness Management, 2nd edition, rev., Fulcrum Publishing, Golden, CO, 1990.

- Hoffer, Audrey and Elizabeth Mikols, Unique Natural Areas in the Catskill Region, Catskill Center for Conservation and Development, Inc., 1974.
- Kudish, Michael, Ph.D. Catskill Soils and Forest History, Catskill Center for Conservation and Development, Inc., 1979.
- Kudish, Michael, Ph.D., personal correspondence, May 20, 1990.
- Kudish, Michael, Ph.D. Vegetational History of the Catskill High Peaks, State University of New York College of Environmental Science and Forestry, Ph.D., 1971.
- McAllister, Lee and Myron Steven Ochman, Hiking the Catskills, New York - New Jersey Trail Conference, 1989.
- Myers III, Franklin Daniel, The Wood Chemical Industry in the Delaware Valley, Prior King Press, Middletown, NY, 1986.
- Nash, Roderick. Wilderness and the American Mind, third edition, Yale University Press, 1982.
- New York State Department of Environmental Conservation. Balsam Lake Mountain Wild Forest Unit Management Plan, 1989.
- New York State Department of Environmental Conservation. Belleayre Mountain Ski Center Unit Management Plan/ Environmental Impact Statement, Division of Operations, Bureau of Recreation, Albany, New York, July, 1985.
- New York State Department of Environmental Conservation. Belleayre Mountain Day-Use Area Unit Management Plan/ Environmental Impact Statement (Addendum to Belleayre Mountain Ski Center Unit Management Plan), Division of Operations, Bureau of Recreation, Albany, New York, July, 1989.
- New York State Department of Environmental Conservation. Final Supplement - Belleayre Mountain Day Use Area Unit Management Plan/ Environmental Impact Statement, Division of Operations, Bureau of Recreation, Albany, New York, April, 1990.
- New York State Department of Environmental Conservation. Beaverkill Public Campground Final Unit Management Plan, Division of Operations, Bureau of Recreation, Albany, New York, 1990.
- New York State Department of Environmental Conservation. Catskill Park State Land Master Plan, 1985.

- New York State Department of Environmental Conservation and the Office of Parks, Recreation and Historic Preservation. Conserving Open Space in New York State. June 1992.
- New York State Department of Environmental Conservation. Cultural Resources Investigation of the Beaverkill Public Campground, Town of Rockland, Sullivan County, New York. Bureau of Recreation, Division of Operations, July 30, 1990.
- New York State Department of Environmental Conservation, Division of Fish and Wildlife - Information Resources Section. Natural Heritage Maps and Data, 1990.
- New York State Department of Environmental Conservation, Division of Fish and Wildlife - Nongame Unit. Checklist of the Amphibians, Reptiles, Birds and Mammals of New York State, Including Their Protective Status, 1987.
- New York State Department of Environmental Conservation. Fishery Management in Wilderness, Primitive and Canoe Areas, Organization and Delegation Memorandum #91-31 Policy, 1991.
- New York State Department of Environmental Conservation. Liming Policy (Revised). Division of Fish and Wildlife, June, 1991.
- New York State Department of Environmental Conservation. Programmatic Environmental Impact Statement on Habitat Management Activities of the New York State Department of Environmental Conservation, Division of Fish and Wildlife, Albany, New York, December 1979.
- New York State Department of Environmental Conservation. Programmatic Environmental Impact Statement on Fish Species Management Activities of the New York State Department of Environmental Conservation, Division of Fish and Wildlife, Albany, New York, June 1980.
- New York State Department of Environmental Conservation. Slide Mountain - Panther Mountain Wilderness Unit Management Plan, 1987.
- New York State Department of Environmental Conservation. Trail Construction and Maintenance Manual, Division of Operations, 1982.
- New York State Department of Environmental Conservation. Tree Cutting Policy on Forest Preserve Lands, Organization and Delegation Memorandum #84-06, 1984.

- New York State Department of Environmental Conservation.
Willowemoc - Long Pond Wild Forest Unit Management Plan,
1991.
- New York State Office of Parks, Recreation and Historic
Preservation, People, Resources, Recreation: 1988-1993
New York Statewide Comprehensive Outdoor Recreation Plan,
Albany, New York, 1988.
- Proudman, Robert D. and Reuben Rajala. Trail Building and
Maintenance, Appalachian Mountain Club. 2nd edition, 1981.
- Rich, John Lyon. Glacial Geology of the Catskills, New York
State Museum Bulletin No. 299, December, 1934.
- Robbins, Chandler S., Deanna K. Dawson, and Barbara A. Dowell.
Habitat Area Requirements of Breeding Forest Birds of the
Middle Atlantic States. Wildlife Monographs 103:1-34, The
Wildlife Society, 1989.
- Studer, Norman. A Catskill Woodsman: Mike Todd's Story, Purple
Mountain Press, Ltd. Fleischmanns, N.Y., 1988.
- Sylvester, Nathaniel Bartlett. History of Ulster County, NY,
Overlook Press, Woodstock, NY, 1977.
- Temporary State Commission to Study the Catskills. Forest
Resources of the Catskill Region, State University of New
York, College of Environmental Science and Forestry, 1974.
- Tiffany, Lena O. B., Pioneers of the Beaverkill Valley, Village
Printer, Laurens, NY, 1976.
- U.S.D.A. Soil Conservation Service, Soil Survey of Ulster County,
New York, 1979.
- Unknown Author. Frost Valley History, Frost Valley YMCA Camp,
circa 1979.
- Wadsworth, Bruce, Guide to Catskill Trails, Adirondack Mountain
Club, Inc., 1988.
- Wakefield, Manville B., To the Mountains by Rail, Wakefair Press,
Grahamsville, NY, 1990.

